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The aim of the research program we are developing is to define molecular markers and their interaction with other risk factors as risk indicators for development of breast cancer among women with benign breast disease (BBD). Our specific aims are:

1. Estimate the incidence and time span of breast cancer development in a large cohort of African American and Caucasian women with biopsy-proven BBD;

2. Collect and archive in a specimen bank samples of benign breast disease lesions and breast cancer from women in this cohort;

3. Develop and test a questionnaire for collecting breast cancer risk factor information that will:
   a) allow the construction of an exposure index for lifetime exposure to sex hormones; and
   b) designed to be sensitive to the perceptions of African American as well as Caucasian women.

We are constructing a cohort of 4815 women with BBD between 1981-1994 who will be followed from 5-15 years and yield 248 women who will have developed invasive breast cancer. This work is building the foundation, in terms of a cohort, a specimen bank, a survey instrument, and a summary information index, for the conduct of molecular epidemiologic studies of breast cancer.

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Christine Cole Johnson 11-3-98

PI - Signature Date

TABLE OF CONTENTS

INTRODUCTION

The Specific Aims have not been modified from the original proposal, which relate to laying part of the foundation for our long-term research goals. Our long-term goals are to define molecular markers and their interaction with other epidemiological risk factors, particularly exposure to sex hormones, that can serve as risk indicators for subsequent development of breast cancer. This work will be conducted among two groups of women with benign breast disease (BBD), Caucasians and African Americans. We have requested and obtained a no cost extension of our funds to complete the last remaining tasks in this project. Our specific aims for this developmental work are:

1. to estimate the incidence and time span of breast cancer development in a large cohort of African American and Caucasian women with biopsy-proven BBD;

2. to collect and archive in a specimen bank samples of benign breast disease lesions and breast cancer from women in this cohort;

3. to develop and test a questionnaire for collecting breast cancer risk factor information that will:

   a) allow the construction of an exposure index for lifetime exposure to sex hormones; and

   b) designed to be sensitive to the perceptions of African American as well as Caucasian women.

This work is providing the undergirding for a future research program planned to use the established cohort, biorepository and data collection instruments to delineate clinically important molecular biomarkers of risk and progression in breast cancer and to provide further molecular discriminators of risk in addition to other

correlates such as histologic parameters, estrogen and progesterone exposure, reproductive history, family history of breast cancer, and various demographic characteristics. The important clinical and public health implications of this study include: 1) the ability to identify women with high risk lesions and/or personal characteristics who then can be carefully followed; 2) the ability to identify and reassure a larger population of women having lesions with no increased risk; and 3) the ability to correlate DNA markers, DNA ploidy and histology with hormonal and familial risk factors.

BODY

Women with benign breast lesions, particularly those with lesions classified as proliferative, are at increased risk for subsequent development of breast cancer. The eventual goal of the research program we are developing at the Case Western Reserve University--Henry Ford Health Sciences Center, is to define molecular markers and their interaction with other epidemiologic risk factors, particularly exposure to estrogen, that can serve as risk indicators for subsequent development of breast cancer among two groups of women with benign breast disease (BBD), Caucasians and African Americans. This current application is accomplishing preliminary work that is laying part of the foundation for the eventual research program and be generally applicable in the field of breast cancer epidemiology as well.

The information we are gaining from this work will be used in an eventual study to evaluate, within the identified cohort and using a nested case-control approach, histopathological, molecular, and personal characteristics, including an hormone exposure index, and their interactions as risk factors for the development of breast cancer among African American and Caucasian women with biopsy proven BBD. The developed questionnaire will be useful in general in the conduct of epidemiological studies of breast cancer, especially those that include African American women. The index we are developing will be able to be adjusted as new biological information is acquired regarding the relationship of reproductive characteristics and body burden of

estrogen and progesterone, and could be used in future work. The hormone exposure index could be used to re-evaluate data from previous breast cancer risk factor studies to examine whether a continuous summary score might better explain case-control status.

Experimental Methods

1.0 Specific Aim 1: Cohort Establishment and Follow-up

1.1 Cohort Enrollment

Subjects for the cohort have been obtained from patients who underwent breast biopsy at HFHS in Detroit, MI from 1981-1994. (We were able to extend the years of cohort establishment from the originally proposed 1991 to 1994 because of the passage of time, therefore increasing our sample size and future statistical power.) The patients at HFHS are largely from the three-county metropolitan Detroit area. Each pathology report in the Department of Pathology patient files dated January 1981 through December 1994 has been reviewed by a trained research assistant. (Between 28,000 and 66,000 reports are filed a year. The research assistant has completed the identification of all the cases with a breast biopsy and pulled and copied the pathologic reports (n=10,034). Dr. Raju, co-investigator and pathologist, is reviewing the copies of the pathology reports and identifying the biopsies with a diagnosis of BBD. All reports are categorized into benign and malignant specimens, for which we developed a tracking form (included in the Appendix). Women with a concurrent or previous invasive carcinoma in the same breast or contralateral breast are excluded as they cannot be considered wholly "disease free" (at risk) upon entry into the cohort. Individuals who are found to have a diagnosis of breast cancer within six months of the study biopsy are excluded from the cohort as prevalent cases. When multiple biopsies belonging to one individual are encountered, the first biopsy during the study time period is used, and the date of that biopsy is the time of study enrollment.

The number of eligible subjects with benign lesions was anticipated to be approximately 4815 (Table

1). This estimate was based on review of available material for 1981 and on data from the computerized data base available from 1988-1991. At HFHS, in accordance with departmental policy, all pathology material dating from 1981 has been saved.

All cases of benign breast disease identified through this procedure have been enrolled in the cohort. All individuals enrolled as study subjects are being followed for occurrence of breast cancer.

Table 1. BBD Study Estimates, Follow up through 12-31-96

Year of BBD	No. BBD Samples	No. Excluded	No. Eligible Subjects	Years of Follow-up	Rate Applied per 100,000 Dx at HFH†	PY Follow-Up	Exp No. HFH Br. C	Total Cases ‡
1981	168	19	149	15	336	2235.24	7.5	10
1982	242	27	215	14	336	3005.16	10.1	13
1983	268	30	238	13	336	3090.31	10.4	14
1984	186	21	165	12	336	1979.78	6.7	9
1985	298	34	264	11	336	2907.59	9.8	13
1986	378	43	335	10	336	3352.86	11.3	15
1987	600*	68	532	9	551	4789.80	26.4	35
1988	821	93	728	8	551	5825.82	32.1	43
1989	740	84	656	7	551	4594.66	25.3	34
1990	840	95	745	6	551	4470.48	24.6	33
1991	887	100	787	5	551	3933.85	21.7	29
	5428	613	4815			40186	186	248

† Actual 1981 rate used for 1981-1986; actual average annual rates from 1988-93 used for 1987-1991.
‡ Based on the 1981 pilot cohort showing a third of cases of breast cancer diagnosed outside HFHS.
* Estimate, other years actual.

Table 2 below presents the actual number of subjects in the cohort by year and the number of cases ascertained thus far, although final classification of a subject as having BBD, as well as follow-up are not yet complete. From 1981-1989, 2,263 biopsy reports have been identified as benign and potentially eligible. We are currently conducting the categorization of the 1990 breast biopsy reports.

Data bases have been developed that include study ID, medical record number, pathology specimen number, and tracking form results, as well as other data sources (pathology classification, medical record

abstract, follow-up information, risk factor questionnaire, tumor registry).

Table 2. Comparison of estimated and actual numbers for eligible cohort subjects and breast cancer cases

Year of BBD	Est. No. BBD Subjects	Actual No. BBD Subjects	Est. No. Breast Cancer Cases	Actual No. Breast Cancer Cases
1981	149	124	11	13
1982	215	132	15	10
1983	238	143	16	15
1984	165	123	10	11
1985	264	159	15	12
1986	335	221	18	22
1987	532	486	43	17*
1988	728	442	53	16*
1989	656	433	43	15*
1990	745		44	
1991	787		40	
1992	787		35	
1993	787		29	
1994	787		23	

*follow-up not complete

Aim 1 of our study is to calculate the incidence of breast cancer in our cohort, stratifying by characteristics of our BBD subjects and the baseline pathology classifications. We will also evaluate time to diagnosis by initial pathology category. Our follow-up is not yet complete; however we have calculated crude incidence rates by year of BBD in the table below, and an abstract with these data has been submitted to the American Association for Cancer Research meeting in April 1999.

Table 3. Calculation of crude incidence rates for breast cancer in the BBD study cohort

Year	No. in BBD Cohort	Person-years of follow-up	No. breast cancer cases	Incidence rate/yr/100000	95% Confidence Interval
1981	124	1749	13	743	432-1280
1982	132	1793	10	558	300-1037
1983	143	1773	15	846	510-1403
1984	123	1437	11	766	424-1382
1985	159	1697	12	707	402-1245
1986	221	2092	22	1052	692-1597
1987	486	4291	17	396	246-637
1988	442	3493	16	458	281-748
1989	433	2992	15	501	302-832
Average	251	2369	15	615	518-729

To date we have found 131 breast cancer cases. The rates are substantially higher than those found in

the SEER cancer registry data representing the general population.

For each potential benign breast specimen, the primary pathologist microscopically reviews all corresponding pathology slides and diagnostically records all lesions on a detailed Pathology Review Form (PRF) (see Appendix). Our pathologist has reviewed a total of 806 specimens (as of September 1998). An intra-rater reliability study has been incorporated into the pathology review, whereby a 10% sample from each cohort year is selected by the programmer for blinded rereview by the primary pathologist. Based on 57 rereviews, results indicate reliability to be well over 90%. Cases diagnosed with atypical hyperplasia are also reviewed by secondary pathologists for inter-rater reliability (14 cases have been completed to date).

1.2 Cohort Follow-up

The initial source for follow-up information has been the Henry Ford Health System (HFHS) tumor registry. Many of the subjects who develop breast cancer, who continue to reside in metropolitan Detroit, return to HFHS for diagnosis and treatment. Information stored in the HFHS tumor registry includes basic demographics, in addition to occupation, family history of cancer, and a summary of concurrent and underlying medical conditions.

Secondly, we are locating and tracing each woman to interview her by telephone and inquire about breast cancer status (see form in appendix). A trained interviewer follows up and contacts cohort members to ascertain the occurrence of breast cancer and the willingness of cohort members to participate in a telephone interview at some later point in time.

We have found that considerable information useful for locating study subjects is automated in our electronic medical record system, so we are utilizing that source initially to conduct follow-up. All women entered into the study and the next of kin of those known to be deceased, are being contacted through letter and follow-up phone call requesting information on cancer history and for a locator form for future contacts.

Introductory letters have been mailed for the years 1981-1986 (n=1850). The names of those women remaining lost to follow-up after substantial tracing efforts will be linked with the statewide cancer and mortality registries. Names of individuals who cannot be located with these methods will be submitted to a firm specializing in the tracing of persons for research purposes.

Subjects or their next of kin who have had a breast cancer diagnosed at a facility that is not affiliated with HFHS are being asked to sign a release document that gives us permission to obtain and review their hospital records to obtain specific information on the reported cancer and obtain pathological material.

1.3 Sample Size and Analysis Plan

Based on our numbers to date, there will be data on approximately 4200 women diagnosed with benign breast disease during the years 1981 through 1994 in this study, which is fewer than we anticipated. The underestimate is mainly due to a larger percentage of biopsies being done on women with a previous breast cancer than anticipated. Our person-years of follow-up are now estimated to be at 36,000. However, thus far our breast cancer rates have been higher than anticipated. Our statistical power estimates are displayed below.

Expected 95% Exact Poisson Confidence Intervals

Incident Breast Cancer Cases

Per 1000 Person Years of Follow-up

Person Years of Follow-up	50	10	5	1
40,000	.048, .052	.009, .011	.004, .006	.0007, .0014
20,000	.047, .053	.009, .011	.004, .006	.0006, .0015
10,00	.046, .055	.008, .012	.004, .007	.0005, .0018
1,000	.037, .066	.005, .018	.002, .012	.00003, .0056

1,000	.037, .066	.005, .018	.002, .012	.00003, .0056

We will use Kaplan-Meier curves to describe time to detection of breast cancer adjusting for important covariates such as ethnicity and BBD histology.

2.0 Specific Aim 2: Identification and Archival of Breast Tissue Specimens

We have established a breast tissue biorepository for the pathological material collected from archived samples in this study. Dr. Worsham (Co-PI), as Director of the Cancer Molecular Epidemiology Laboratory, is overseeing the breast tissue biorepository. The pathology archives have been and continue to be searched by the laboratory research assistant to retrieve slides and respective paraffin-embedded tissue blocks. When only blocks remain, the blocks will be cut and new slides prepared for storage.

We recognize that this biorepository for many reasons will serve as an important resource for molecular studies of future relevant biomarkers. We have been able to appreciate with even greater clarity the limitations that are inherent with DNA amounts from small foci such as hyperplasia, atypical ductal hyperplasia and other preneoplastic lesions of small foci. In addition, recognition of the enormous importance of this research has been demonstrated by the Henry Ford Health System in several ways. The system has purchased an ABI 377 DNA sequencer, and a LightCyler (Roche), a high through-put quantitative PCR system. The latter items will permit more efficient and successful completion of studies especially in cases where DNA is limited. Also, HFHS has provided internal funds to support work that will further ensure that the cohort developed by this grant will serve as a biorepository for other studies. As a result, we are currently working to amplify whole genomic DNA from paraffin sections using the Whole Genomic Amplification (WGA) approach. This should ensure a minimal dropout from studies of BBD cohort subjects with small lesions (and therefore only marginal amounts of DNA), and also ensures availability of DNA. Moreover, the HFHS Josephine Ford Cancer Center

has committed funding to support the construction of an organized system biorepository that will serve as a cultured cell bank and a DNA bank not only for breast cancer but other cancers as well.

3.0 Specific Aim 3: Development of a Risk Factor Questionnaire

3.1 Development of Sex Hormone Exposure Index

Numerous breast cancer risk factor studies have been conducted examining various characteristics that are surrogate measures of exposure to estrogen. However, in the past, selected characteristics were often analyzed in a univariate fashion, or controlling for only a few other estrogen-related variables. Further, the number of subjects required in a study to achieve optimal statistical power becomes daunting as the number of independent variables in an analysis increases and are used in a categorical fashion. We have developed a questionnaire, using a calendar approach as a memory prompt, to inquire extensively about factors that are associated with sex hormone exposure. We are also continuing to review the literature to obtain up-to-date information on data regarding physiologic levels of estrogen and progesterone related to reproductive characteristics and exogenous hormone exposures in order to derive weights for these characteristics. In the process of finalizing our variables to be collected, we have consulted with two physicians specializing in reproductive endocrinology, Ronald Strickler and Max Wisgerhof. Using our questionnaire, we hope to be able to assess cumulative hormonal exposure at various points of time in a woman's life in order to examine whether cumulative exposure relative to age is important. There is reason to believe that the breast is most susceptible to carcinogenic influences at younger ages; DNA synthesis is higher in young individuals, and women under age 20 were at highest risk for radiation-induced breast cancer after atomic bomb exposure.

3.11 Variables to be Collected

We have included on the data collection instrument questions about age at menarche, lifetime menstrual

cycle pattern, menopausal history, dates and duration of pregnancies, duration of lactation, infertility, history of use of oral contraceptives, fertility drugs, estrogen replacement therapy, and height and weight history (see Appendix for questionnaire).

3.12 Development of Exposure Indices

Since we will not have actual hormone exposure data for individuals in potential retrospective studies (i.e. blood levels over time), our exposure assessment will focus on the surrogate measures for estrogen and progesterone exposure listed in the survey instrument and calendar. We are assigning estimated quantitative hormone exposure scores for different reproductive characteristics during various segments of a woman's life (for example, none/low, medium, and high categories) by relying on data in the literature and on the expertise and experience of the investigators and our consultants.

3.2 Design of a Risk Factor Questionnaire Sensitive to a Multi-Ethnic Population

Focus groups, which allow for group interaction and greater insight into the meaning of certain questions in specific populations, may be used to plan and design questionnaire items or to evaluate existing ones. Discussions during focus groups are a qualitative approach to learning about psychological and sociocultural characteristics and processes in subgroups of the general population. Focus groups are typically composed of 7 to 10 participants who are usually homogenous in such characteristics as age, gender, race/ethnicity, and social characteristics.

This past Summer we held two focus groups for two purposes: to develop questions that are culturally tailored to African American women in the two age groups, and to examine the perceptions of the women toward components of existing questionnaires assessing estrogen exposure and other breast cancer risk factors. These perceptions were used to adapt our draft to make them better suited for use among African American

women. The women's opinions regarding the cultural sensitivity and feasibility of existing questionnaire items related to estrogen risk factors was solicited. The first focus group (n=12) was held with African American women aged 18-150 years who were randomly selected from the Henry Ford Health System (HFHS) patient population and invited to participate in a two-hour focus group, while the second focus group (n=9) was held with African American women aged 50+ years who were recruited in a similar manner. Each two-hour focus group was audiotaped and videotaped. Based on the comments the women generated during the focus group meetings, the questionnaires were revised.

3.3 Testing of RFQ

We are now piloting our near final version of the instrument on both African American and Caucasian women, as well as include women who vary by age and socioeconomic status. In the next few months, we will complete our reliability studies by asking a sample of individuals served by the HFHS. Using HFHS databases to identify the women, information on age, race, insurance status and address will be reviewed. Addresses will be linked to census blocks, and together with insurance category, used to select women of varying socioeconomic status. Self-administered and interviewer telephone administered versions will be assessed to test the reliability of the different methods against each other. We will do this by administering the questionnaire using combinations of the two different methods to the same woman with a four-month interval between administrations.

As a reliability test of the instrument, each type of questionnaire (self and phone) will be piloted on a new group of women and re-administered by the same interviewer 4 months after the initial interview. We hope that the intervening four months would be a long enough period to preclude retained memory of previous responses to the questionnaire. Variables that are not time-sensitive will be analyzed for comparability, taking into consideration changes that may have occurred over 4 months.

months apart. Again, comparisons will be made between non-time-sensitive variables.

Each of the reliability assessments will be made in the subgroups of Caucasian women and African American women, as well as pre-menopausal and post-menopausal women.

3.5 Use of RFQ Results

Based on the results from the reliability studies, a finalized version of the questionnaire(s) will be completed. Recommendations will be made as to whether different data collection modalities may be employed in future studies using these instruments.

4.0 Spin-off benefits of the DoD funding

As a spin-off to this work, we linked all the breast cancer cases in the HFHS tumor registry with the Detroit SEER registry to obtain survival data. We have analyzed these data with a focus on explaining the difference in survival between a subset of African American (AA) and European American (EA) women belong to our system HMO. Screening, diagnosis, treatment and follow-up patterns for this population are based on standard practices within the medical group, with mammography as a covered benefit. We abstracted data on cases of breast cancer diagnosed between 1986-1996 (N=886) and followed these cases for survival through April 1997 (N=137 deaths). Many studies have shown that AA women with breast cancer have poorer survival than EA women. After adjustments for socioeconomic variables, survival differences between blacks and whites are generally diminished, but remain, and may be due to residual differences in access to health care or biologic or behavioral differences. In our study, AA women were diagnosed at a later stage when compared with EA women. Five-year survival was 77% for AAs and 84% for EAs. Using a Cox regression model, the crude hazard for AAs relative to EAs was 1.6 (95% confidence interval (CI) 1,1, 2.2). Adjusting only for stage

of disease at diagnosis, the hazard ratio was 1.3 (95% CI 0.9, 1.9). Adjusting only for sociodemographics (age, marital status and income), the hazard ratio was 1.2 (95% CI 0.8, 1.9). After adjusting for age, income, marital status and stage, the hazard ratio was 1.0 (95% CI 0.7, 1.5). Thus, adjustments taking into consideration differences in stage, sociodemographic and tumor-specific prognostic factors eliminated the effect of race on survival among AA and EA women with breast cancer. In the Appendix is a paper describing these results that has been submitted to the *Journal of the National Cancer Institute*. We also examined treatment differences between these groups and found no material differences (manuscript under review).

These studies used several processes that will be useful in future breast cancer research. This study demonstrated that our administrative billing data can be used effectively to update the HFMG tumor registry. It served to refine statistical methods that will be employed in later data analyses. For example, we considered the possibility that our method of updating the tumor registry's "date last known alive" with visit data would bias our estimates of survival, if one ethnic group were more likely to have contact with our physicians following diagnosis. Therefore, we conducted the analysis twice: first, only tumor registry follow-up dates were included; second, we used the updated data. Only negligible differences between the two approaches were found, justifying analyses with the updated data.

The investigators/consultants on this proposal have also reported results related to breast cancer in other manuscripts or at national meetings, as follows:

Publications:

Worsham MJ, Zarbo RJ. Molecular Assays for BRCA1 and BRCA2: American Society of Clinical Pathologists Check Sample. Diagnostic Immunology, 3:31-47, 1997

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Chapman J-AW, **Wolman E**, Wolman SR, Remvikos Y, Shackney S, Axelrod DE, Baisch H, Christensen IB, White RA, Liebovitch LS, Moore DH, Waldman FM, Cornelisse C, Shankey TV: Assessing Genetic markers of tumor progression in the context of intra-tumor heterogeneity, Cytometry, 31; 67-73,1998

Ulcickas-Yood M, McCarthy BD, Lee NC, Jacobsen G, **Johnson CC**. Patterns and characteristics of repeat mammography among women 50 years and older. Submitted to Journal of the National Cancer Institute, 1998.

Abstracts:

Johnson CC, Blount AC, Abrams J, Raju U, Nathanson SD, Kau Y, **Wolman E**, Wolman S, **Worsham MJ**. Ethnicity and survival from breast cancer. American Association for Cancer Research, New Orleans, March 28- April 1, 1998

Worsham MJ, Wolman SR, **Raju U**, Barnabas N, Nathanson DN, Pals G : Frequency of loss of heterozygosity at the *ATM* and the *BRCA1* loci in women with Stage III and IV breast cancer. International Workshop on Ataxia-Telangiectasia, Clermont- Ferrand, France, November 1997

Worsham MJ, Wolman SR, **Raju U**, Barnabas N, Nathanson DN, Pals G: evaluation of the *atm* locus as a contributing factor in development/progression of *brca1* germline-mutated tumors. Association for Molecular Pathology, San Diego

Worsham MJ, Wolman SR, Raju U, Barnabas N, Nathanson DN, Pals G, Zarbo RJ: Evaluation of *BRCA1* antibodies as a screening tool for germline *BRCA1* mutations. Association for Molecular Pathology, San Diego

Worsham MJ, Wolman SR, **Raju U**, Barnabas N, Pals G: Evaluation of Germline mutations in breast and ovarian cancers using BRCA1 antibodies as screening tools. 17th International Cancer Congress, Rio de Janeiro, August 22, 1998

Students who have worked on the project:

Ulke Bawle, masters student, University of Michigan, June 1997 through the present.

Robert Coates, University of Michigan School of Public Health, Wayne State University Medical School, masters and medical student June 1998 through the present

Marianne Ulcickas-Yood, Boston University, doctoral student, fall 1997 through June 1998.

Conclusions

Progress has been slower than planned, due to the fact that the hard copy pathology report review (now complete) and the pathology classification (not yet complete) took longer than anticipated. Therefore, we did

not use as much interviewing and follow-up time, resulting in funds left over. These funds will be used to finish the project in the next year. To complete this study's Specific Aims, we plan to accomplish the following tasks within this final extension of funding:

-Continue the pathology classification of BBD reports

-Complete the storage and documentation of pathology material

-Test the reliability of the Risk Factor Questionnaire instrument

-Write up our results for publication

Our results will yield a well-documented cohort, biorepository, and data base from which to generate study ideas. We will also have a risk factor questionnaire, tested for reliability, to be used in studies evaluating reproductive and medication related variables in women's health studies, especially epidemiologic studies of breast cancer.

Appendix

Lack of Racial Differences in Breast Cancer Survival in a Managed Care Population

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Abstract

Background: Many studies have shown that African American (AA) women with breast cancer have poorer survival than European American (EA) women. After adjustment for socioeconomic variables, survival differences between blacks and whites are generally diminished, but remain, and may be due to residual differences in access to health care or to biologic or behavioral differences. The purpose of this study was to measure ethnic differences in breast cancer survival between AA and EA women with equivalent health care access and delivery.

Methods: We measured survival in women with breast cancer identified from a population of all female members of an HMO in metropolitan Detroit, served by physicians in a large medical group. Screening, diagnosis, treatment and follow-up patterns for this population are based on standard practices within the medical group, and mammography is a covered benefit. We abstracted data on AA and EA cases of breast cancer diagnosed between 1986-1996 (886 cases) and followed these cases for survival through April 1997 (137 deaths).

Results: AA women were diagnosed at a later stage than EA women. The median follow-up time was 50 months for those still alive. Five-year survival was 77% for AAs and 84% for EAs. Using a Cox regression model, the crude hazard for AAs relative to EAs was 1.6 (95% confidence interval (CI) 1.1, 2.2). Adjusting only for stage of disease at diagnosis, the hazard ratio was 1.3 (95% CI 0.9, 1.9). Adjusting only for sociodemographics (age, marital status and income), the hazard ratio was 1.2 (95% CI 0.8, 1.9). After adjusting for age, income, marital status and stage, the hazard ratio was 1.0 (95% CI 0.7, 1.5).

Conclusion: Among women with similar medical-care access since before their diagnosis, we found ethnic differences in stage of breast cancer at diagnosis. Adjusting for this difference, and for income, age and marital status, eliminates the effect of race on survival among women with breast cancer.

Background

In the United States, survival for African American (AA) women with breast cancer is inferior to that for European American (EA) women *(1)*. The 1970s and 1980s marked a time of relatively stable rates of mortality among EA women with breast cancer, but increasing rates for Aas *(1)*. However, the decline in mortality observed in the early 1990s for EAs with breast cancer was not observed in AAs *(1,2)*. Poorer survival among AAs has been attributed to biological characteristics of the tumor, advanced stage at diagnosis, lower socioeconomic status (SES), barriers to health care, diagnostic and treatment delays *(3,4)* and a higher prevalence of comorbid conditions *(5,6)*. Although use of mammography by AA women has been reported to lag behind Caucasian women *(7)*, recent research indicates that this racial discrepancy is narrowing *(8)*. However, it is too soon to see how increased use of mammography among AAs will affect survival.

While most investigations have found variability in tumor stage at disease presentation across ethnic groups *(9-11)*, researchers suggest that the disparity is related more to SES and its impact on diagnostic delays or even a lag in benefiting from medical advancements *(12)*, as opposed to inherent biologic differences. In most studies, use of multivariable models to control for differences in tumor biology and sociodemographic characteristics have reduced but not eliminated the racial differential in survival *(6,13-16)*. Some studies have attributed the mortality differences to racial disparity in socioeconomic status, with biology playing a lesser role *(17-20)*.

We present analyses of breast cancer survival in a population of health maintenance organization (HMO) members where screening, diagnosis, treatment and follow-up patterns are

based on practice standards and are similar for all members of the population served within a large, multidisciplinary group practice. We selected this population to minimize heterogeneity in care delivery and to eliminate issues of financial barriers to health care.

Methods

Setting

The setting for this study was the Health Alliance Plan (HAP) HMO. HAP is located in southeastern Michigan and is the largest HMO in Michigan, with more than 450,000 members. Approximately 20% of these members are African American, 53% are female, and 57% are cared for by physicians in the Henry Ford Medical Group (HFMG). Our study population was drawn from HAP members served by the HFMG. The HFMG is a large group practice that includes an urban medical center in Detroit with primary and specialty care clinics, and 26 smaller clinics throughout southeastern Michigan.

The HFMG maintains a computerized tumor registry database accredited by the American College of Surgeons. Registry staff use a thorough case finding system, including review of all pathology and cytology reports, as well as radiation and oncology consultations. The American Joint Commission on Cancer (AJCC) system is used to determine stage of disease by evaluating tumor size, extent of invasion, microscopic involvement of lymph nodes and presence of metastases. HFMG Registry staff link these data with Detroit area Surveillance, Epidemiology and End Results (SEER) Program records, and conduct annual follow-up for vital status and recurrence. The annual follow-up is estimated at 94%.

Ascertainment of Cases

Using the HFMG cancer registry, we identified all AA and EA women with newly diagnosed incident breast cancer from January 1986 through April 1996. To minimize heterogeneity in clinical practice and access to care just before diagnosis, we limited the study population to women continuously enrolled in HAP for at least one year before diagnosis and assigned to a primary care physician within the HFMG at the time of diagnosis. We defined continuous enrollment as no more than a 60-day gap in coverage according to membership files.

Outcome Data

We used several sources to identify follow-up data. First, we obtained vital status, date of death (if applicable) and date last known alive from the HFMG tumor registry. Next, for those women known to be alive, we used HFMG administrative billing data to obtain information about hospitalizations and outpatient visits from January 1986 through April 1997. We used the billing data to update the tumor registry date where appropriate.

Identification of Related Variables

Using the tumor registry, we obtained information on tumor characteristics (date of diagnosis, pathologic stage at diagnosis (including tumor size) and demographics (date of birth and marital status). We geocoded addresses from billing files into census block groups. We estimated household income for each woman using block-group-level median household income from the 1990 census data. Information about duration of HAP membership and mammography benefits was downloaded from the HMO membership files.

Statistical Method.

To evaluate stage by race, we fit a polytomous logistic model in which we included pathologic stage (0, I, II, III, IV) as an ordinal dependent variable and race (EA, AA) as an independent variable. We compared survival between AA and EA using the hazard ratio and 95% confidence interval calculated from Cox proportional hazard models. In the model, we included marital status (unmarried, married), age at diagnosis (<55 years, $\geq$ 55 years (corresponding to the mean of this dataset)), estimated household income (<$35,000, $\geq$ $35,000, likewise the mean), and pathologic stage (0, I, II, II, IV) as indicator terms. These variables were chosen based on known relationships with both breast cancer survival and race (i.e., as potential confounders). The assumption of proportional hazards was assessed graphically using logarithmic plots and Schoenfeld's chi-squared goodness-of-fit procedures *(21)*.

We considered the possibility that our method of updating the tumor registry"s "date last known alive" with visit data would bias our estimates of survival, if one ethnic group were more likely to have contact with the HFMG following diagnosis. Therefore, we conducted the analysis twice: first, we included only tumor registry follow-up dates; second, we used the billing data in addition. Differences between the two approaches were negligible; therefore, analyses including the updated data are used in this report.

Results

We identified 1,321 AA and EA women members of HAP who were diagnosed with breast cancer from January 1986 through April 1996 and for whom mammography was a fully

covered benefit. From this group, we excluded 161 women because they were not assigned to HFMG physicians at the time of diagnosis, and an additional 274 women because they were not continuously enrolled in HAP for one year before diagnosis, for a final sample of 886 women. The proportion of AAs was the same (30%) among the women excluded and the study group.

The median follow-up time was 50 months overall and was similar for AA (49 months for those still alive) and EA women (50 months for those still alive). A total of 137 deaths occurred during the study period. Table 1 shows the baseline demographic and tumor-specific characteristics of the study population. Overall, EA women were more likely to have earlier stage disease at diagnosis than AA women (p=0.007). Examining this issue more closely, EAs were more likely than AAs to have earlier stage (0, I) disease, with a difference of 11% (95% CI 3%, 18%). Among women diagnosed with stage II disease (which includes cancers with and without lymph node involvement) we found no material difference between AA and EA women in the proportions with positive lymph nodes (difference=5%, 95% CI -6%, 17%).

The 5-year survival was 77% for AAs and 84% for EAs. There was no evidence of violation of the proportional hazards assumption. The crude estimates by race are shown in Figure 1. AAs had poorer survival compared to EAs (hazard ratio= 1.6, 95% CI (1.1, 2.2) (Figure 1). Table 2 presents the hazard ratios adjusted for pathologic stage and sociodemographics, separately and in combination. When stage was added to the model, the hazard ratio decreased to 1.3. Adjusting only for sociodemographics, the hazard ratio was reduced to 1.2. When we controlled for both stage and sociodemographics, the hazard ratio was reduced to 1.0 (95% CI 0.7, 1.5). The survival curves by race, adjusted for sociodemographic characteristics and stage, are shown in Figure 2, and reflect this equivalent survival pattern.

Discussion

It is well-known that survival after breast cancer diagnosis is poorer for AAs than for Eas *(1-3,6,14-16,18,20)*. Our study confirms what other authors have found by showing that part of the difference in survival is explained by differences in stage at presentation. Some studies have demonstrated that in addition to adjusting for stage, controlling for income explains the gap in survival between African Americans and Caucasians *(17-20),* while other studies show that adjustment for SES does not completely diminish the effect of race, even after adjusting for stage *(3,6,13-15,22)*. In our population, sociodemographic variables and stage of disease, taken separately, had comparable confounding effects on the association between race and survival.

In our study, lack of insurance coverage for screening or diagnostic services, a factor that could be linked to both later stage at diagnosis and lower SES, was not the issue. This result, confirmed by other studies *(22),* indicates that reasons other than ability to pay for services contribute to later detection. These factors may include different beliefs about cancer risk or usefulness of early detection, differences in the effect of outreach or reminder strategies, or differences in other types of access, such as transportation or ability to get time off from work to keep appointments *(4)*. Another consideration is that biologic factors, such as tumor aggressiveness or differences in breast density that impact mammography effectiveness could contribute to the racial differences in stage at diagnosis and, therefore, survival *(9-11)*.

Our study extends the work of others by singling out patients within one medical group and HMO and examines whether socioeconomic status and stage had an effect on survival when economic access to health care was removed as a barrier. The concept of our work is similar to

that of a study using the Department of Defense (DoD) Central Tumor Registry *(22)*. These authors found that AA with breast cancer who received care within the DoD system had improved survival compared to the general population of African American women with breast cancer. Even after adjusting for age and stage, the authors found racial differences in breast cancer survival in this equal-access system, with more favorable survival for EA women. However, income was not controlled in this analysis.

Our results show that even within an equal-access population, a large discrepancy in income exists between AA and EA women; and this variable contributes to differential survival. The unique contribution of our paper is to have included an improved indicator of income, and to have focused on patients within a single HMO and medical group providing equal mammography coverage and homogeneity in health care access and delivery.

Our study has limitations including the fact that we were unable to study a population of adequate size covered from birth, which might have added to the understanding of racial differences in stage at detection. Another limitation is that we estimated income from US census data. As a result, we expect some degree of misclassification of income. However, by mapping the addresses to block groups, the misclassification should occur to a lesser degree than if we had used estimates based on census tracts or zip codes. Our study did not include information on some factors related to survival that also may be related to race, such as estrogen receptor status. In addition, our study did not incorporate tumor grade because this variable was not always recorded in the tumor registry database; without consistency of pathology review and with problems of tissue retrieval, this prognostic factor could not be evaluated. Finally, most of the

women in our study were over the age of 50 years. Therefore, our conclusions cannot necessarily be extended to younger (predominantly pre-menopausal) women.

Nevertheless, we found that in a setting with relatively homogeneous access to health care, racial differences in survival disappeared after adjusting for sociodemographics and stage. In seeking to understand this issue, it is important to note that it is difficult, if not impossible, to completely separate the effects of sociodemographics and stage. These findings emphasize the need to focus on the factors that diminished the effect of race. For example, culturally sensitive outreach and education, physician-patient interaction, or interventions to overcome psychosocial barriers may need special attention in addition to facilitating appointment scheduling and using reminder systems to educate and influence AA women.

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Table 1. Baseline Demographic and Tumor Characteristics

Variable	African American N = 273	European American N = 613
Sociodemographics		
Married	54%	59%
Mean Age (SE) at diagnosis	55 ($\pm$ 0.8)	56 ($\pm$ 0.5)
Median household income (SE)	\$26,000 ($\pm$ \$931)	\$44,000 ($\pm$ \$783)
Mean years (SE) HMO enrollment before diagnosis	6.9 ($\pm$ 0.3)	5.4 ($\pm$ 0.1)
Tumor Characteristics		
Stage 0	17 %	21 %
I	29 %	36 %
II	40 %	33 %
III	9 %	8 %
IV	5 %	3 %
Mean tumor size (cm) (SE)	2.4 ($\pm$ 0.1)	2.1 ($\pm$ 0.1)

Table 2. Effect of Demographic and Tumor Characteristics on Survival Estimates

Variables in Model	Hazard Ratio (African American versus European American)	95% Confidence Interval
Race Only	1.6	(1.1, 2.2)
Race + Stage	1.3	(0.9, 1.9)
Race + Sociodemographics*	1.2	(0.8, 1.9)
Race + Stage + Sociodemographics*	1.0	(0.7, 1.5)

* Age, marital status and median household income

Figure 1. Crude Kaplan-Meier Survival Estimates, by Race

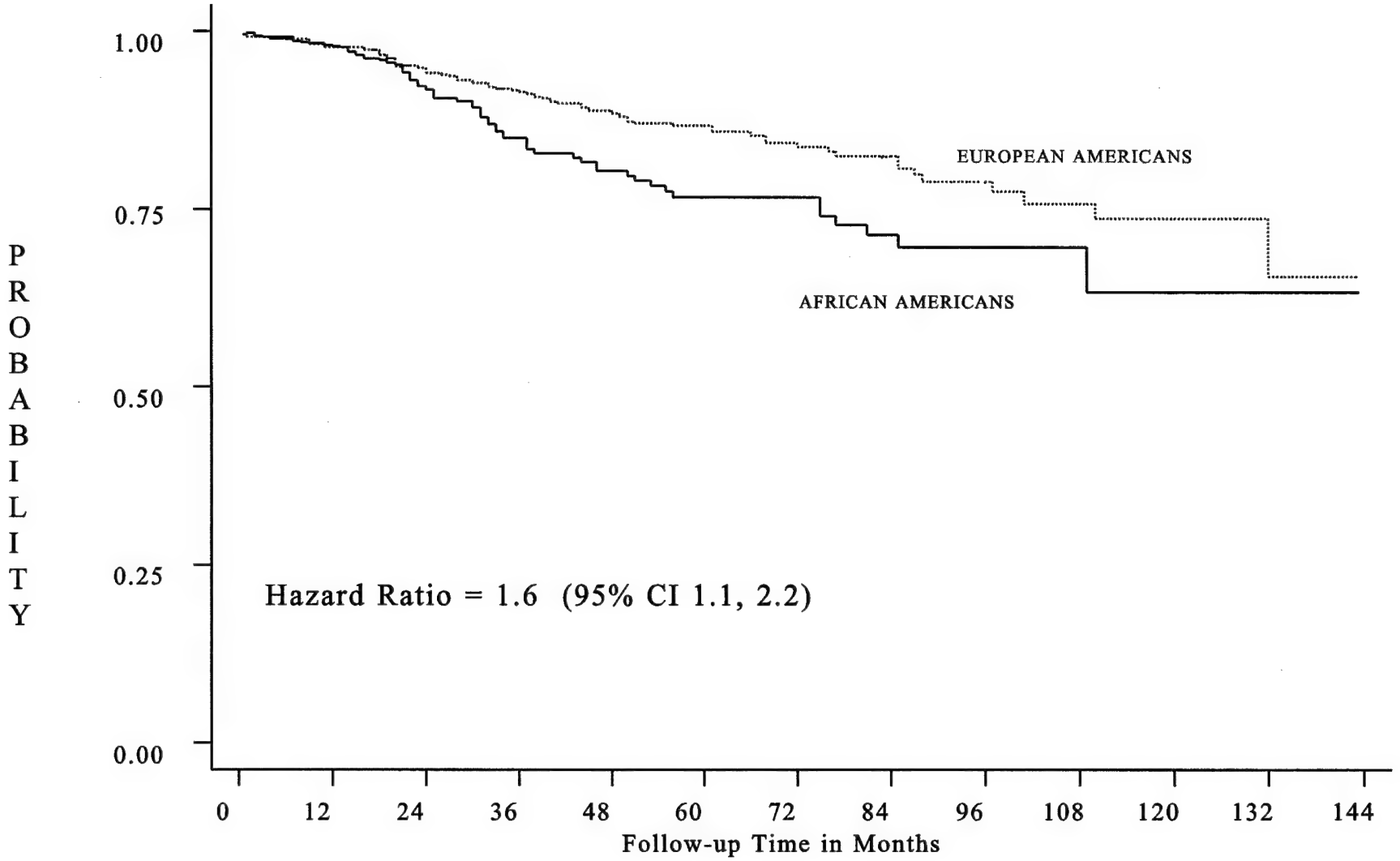
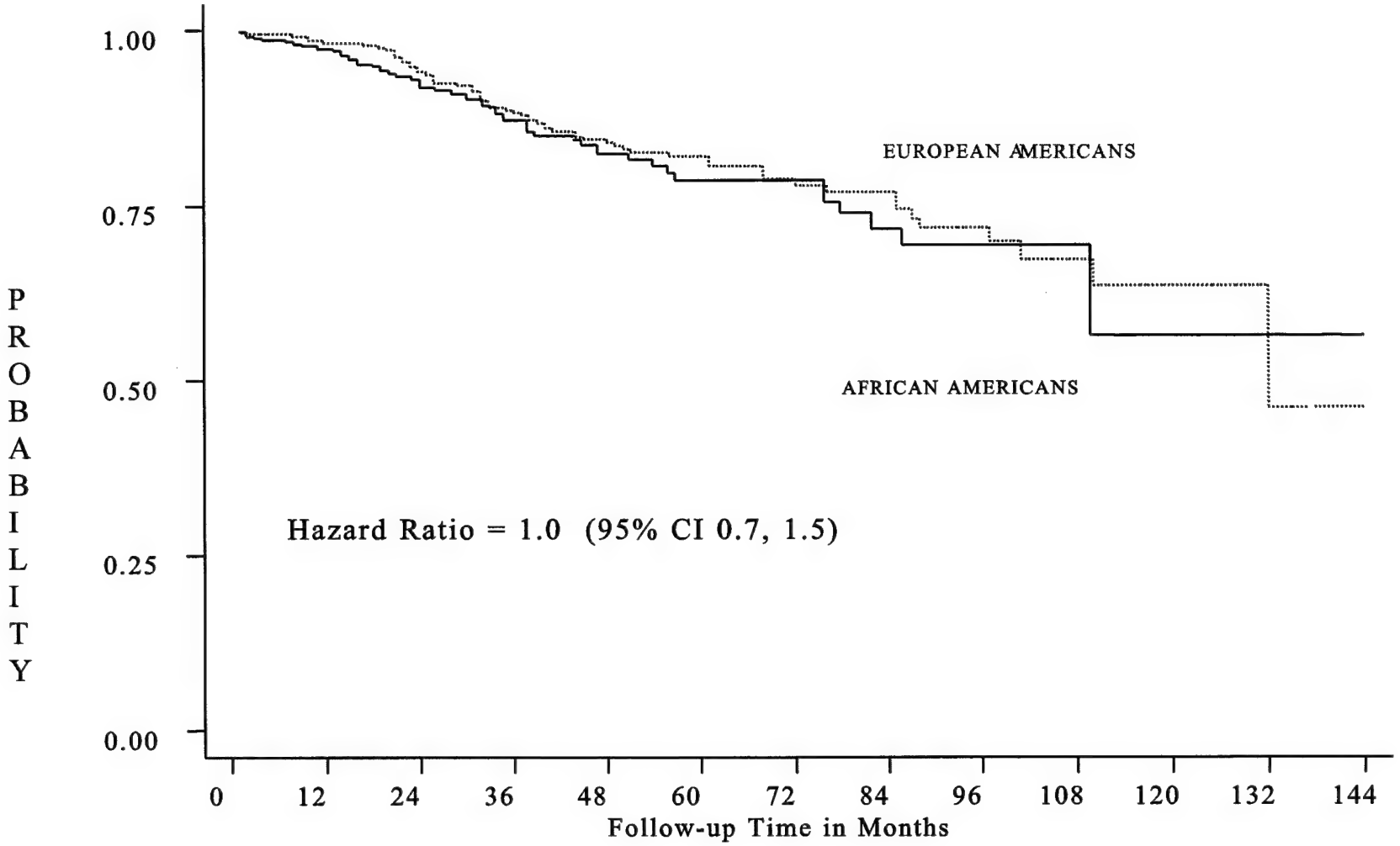


Figure 2. Survival by Race, Adjusted for Age, Income & Marital Status and Stage



BENIGN BREAST DISEASE STUDY

LOCATOR FORM

All study subjects have been mailed an introductory letter briefly explaining the study. As an interviewer, you will be calling subjects to administer a short health survey. All numbered survey questions should be read. Instructions and survey codes are enclosed in [ ].

INTRODUCTION:
"Hello may I speak with **[Subject]**? Hello, my name is **[Interviewer]** and I am calling from a women's health study being conducted by Henry Ford Health System. We recently sent a letter telling you about our study looking at the prevention of disease among women. As a woman who at some time has received medical care at Henry Ford, I would like to ask you some questions about your health. All information you provide will be strictly confidential. This will only take a few minutes."

[**IF SUBJECT IS DECEASED OR UNABLE TO ANSWER THE QUESTIONS:** Explain study to contact person and ask them if they will complete Locator Form questions #5 and 7 as it relates to the study subject. State that we may need to contact them for additional information about the subject. Ask the contact person for their name, address and phone number and record on the corrected side of the Data Sheet. Record who completed the form on page 6.]

[**IF SUBJECT DID NOT RECEIVE THE LETTER:** Paraphrase the letter to the subject. If they would like another copy of the letter sent to them, verify their name and address and inform them you will be calling back after the letter is mailed.]

1. On average, how often do you see your primary care physician? **[Read 1-4]** _____

    1. More than once a year
    2. Once a year
    3. Once every 2-3 years
    4. Less than every 4 years
    9. Don't Know

2. On average, how often do you receive a mammogram? **[Read 1-4]** _____

    1. More than once a year
    2. Once a year
    3. Once every 2-3 years
    4. Less than every 4 years
    9. Don't Know

3. On average, how often do you have a pap smear? **[Read 1-4]** _____

1. More than once a year
2. Once a year
3. Once every 2-3 years
4. Less than every 4 years
9. Don't Know

4. Have you ever been diagnosed with ovarian cysts? **[0=No, 1=Yes, 9=DK]** _____

5A. Have you ever had any type of breast procedure, such as a needle biopsy or a lump or cyst removed?

[0=No (Skip to 6A), 1=Yes, 9=DK] _____

5B. Can you tell me when you had your most recent breast procedure? _____ OR _____

Month/Year Age at Surgery

5C. At the time of this procedure, when you were not feeling well, say with a sore throat or other general illness, did you go to a primary care doctor at Henry Ford?

[0=No, 1=Yes, 9=DK] _____

6A. Have you ever had any <u>other</u> type of medical procedure where tissue, such as skin or a polyp, was removed?

[0=No (Skip to 7A), 1=Yes, 9=DK] _____

6B. Can you tell me what your most recent procedure was? _____

6C. And when did you have this procedure? _____ OR _____

Month/Year Age at Procedure

6D. Can you tell me the name and location of the medical facility or hospital where you had this procedure?

Name	City	State

7A. Have you ever been diagnosed with breast cancer?

[0=No (Skip to NO section below), 1=Yes, 9=DK] _____

7B. When were you diagnosed with breast cancer? _____ (Month/Year) OR _____ (Age at Diagnosis)

brcahfh [0=no, 1=Yes, 9=DK] _____

7C. Can you tell me the name and location of the medical facility or hospital where you were diagnosed?

Name	City	State

IF YES TO #7A:

"We are especially interested in learning more about breast cancer. We would like to contact you again to ask you some additional questions about your health. For that reason, I would like to take a minute to confirm location information with you. "

IF NO TO #7A:

"We are very interested in the prevention of disease among women. We may be contacting you again to ask you some additional questions about your health. For that reason, I would like to take a minute to confirm location information with you."

GO TO PRE-PRINTED DATA SHEET TO CONFIRM INFORMATION

8. If you have a vacation home or other residence, could you tell me the address, telephone number and time of year you are at that residence?

[0=No Other Residence (Skip to 9), 1=Yes] _____

Street Address _____

City, State, Zip Code and Country _____

Phone (___ ___ ___) ___ ___ ___-___ ___ ___ ___

Time at Residence From (M/D): _____ / _____ To (M/D): _____ / _____

9. Can you tell me the names of two adults who live with you and what their relationship is to you?

[0=No/Lives Alone, 1=Yes, 2=Unwilling to State] _____

1. First and Last Name _____ Relationship_____

2. First and Last Name _____ Relationship_____

10. What is the name, address and telephone number of your current primary care physician or clinic?

[0=No Primary Care Physician, 1=Yes, 2=Unwilling to State] _____

Name of physician or clinic _____

Street Address _____

City, State, and Zip Code _____ _____

Phone (___ ___ ___) ___ ___ ___-___ ___ ___ ___

11. It would be great help to us if you could provide us with the names and addresses of two people who you do not live with that could give us your new address should you move. We would only contact these people if we were unable to reach you at your home address.

[0=No One Available, 1=Yes, 2=Unwilling to State] _____

1. Name of Contact _____

   Street Address _____

   City, State, and Zip Code _____ _____

   Phone (___ ___ ___) ___ ___ ___-___ ___ ___ ___

   Relationship _____

2. Name of Contact _____

   Street Address _____

   City, State, and Zip Code _____ _____

   Phone (___ ___ ___) ___ ___ ___-___ ___ ___ ___

   Relationship _____

CLOSING:
"That all the information that I need today. Thank you for taking the time to respond to these questions. Your cooperation in this women's health study is greatly appreciated. "

Go to Page 6 to complete Interviewer Assessment

END OF INTERVIEW

INTERVIEW ASSESSMENT

Complete the following items after finalizing the interview.

1. Record subject's status. _____

    1. Alive, living in own or relative's home
    2. Alive, living in nursing home/residential care facility
    4. Deceased
    7. Other (specify) _____

2. Record who completed the Locator Form. _____

    1. Subject
    2. Spouse
    3. Offspring
    7. Other (specify relationship) _____

3. If Locator Form was not completed by subject, record why.

    [Skip if subject completed form or is deceased.] _____

    1. Physical illness or confinement
    2. Mental instability
    3. Difficulty understanding or speaking English
    4. Poor hearing or speech
    7. Other (specify) _____
    8. Not Applicable
    9. Don't Know

4. Record your perception of the subject's willingness to be contacted in the future. _____

    1. Willing
    2. Not willing
    7. Other (specify) _____
    9. Don't Know

5. Record any additional comments relevant to the interview:

_____

_____

_____

BENIGN BREAST DISEASE PATHOLOGY REVIEW FORM

PLACE LABEL HERE:
MRN
Pathology # Specimen #
Date of Pathology Report

BIOPSY REVIEWER

- ☐0 No ☐1 Yes Usha Raju
- ☐0 No ☐1 Yes Richard Zarbo
- ☐0 No ☐1 Yes Sandra Wolman

FORM COMPLETION DATE

___/___/_____

TYPE OF BIOPSY

- ☐1 Needle
- ☐2 Excision
- ☐3 Simple Mastectomy
- ☐4 Modified Radical Mastectomy
- ☐7 Other _____
- ☐9 Unknown

LOCALIZATION

- ☐0 No
- ☐1 Yes
- ☐9 Unknown

LOCATION OF BREAST BIOPSY

- ☐1 Left
- ☐2 Right
- ☐9 Unknown

BREAST QUADRANT

- ☐1 Upper Inner
- ☐2 Lower Inner
- ☐3 Central
- ☐4 Upper Outer
- ☐5 Lower Outer
- ☐9 Unknown

GROSS FINDINGS

- ☐1 No lesion
- ☐2 Cyst(s) ⇒ ☐1 Solitary ☐2 Multiple
- ☐3 Mass(es) ⇒ ☐1 Solitary ☐2 Multiple

Size of Largest Mass/Cyst ___ . ___ cm

- ☐7 Other _____
- ☐9 Unknown

MAMMARY EPITHELIAL TISSUE BIOPSY

- ☐0 No
- ☐1 Yes

MICROSCOPIC FINDINGS

SIMPLE APOCRINE METAPLASIA

PRESENT	FOCI	CALCIFICATIONS
☐0 No	☐1 1	☐0 No
☐1 Yes	☐2 2-5	☐1 Yes
	☐3 6+	

CYSTS

PRESENT	FOCI	CALCIFICATIONS
☐0 No	☐1 1	☐0 No
☐1 Micro Only	☐2 2-5	☐1 Yes
☐2 Macro	☐3 6+	

PERIDUCTAL MASTITIS/DUCT ECTASIA

PRESENT
- ❑0 No
- ❑1 Yes

CALCIFICATIONS
- ❑0 No
- ❑1 Yes

MASTITIS

PRESENT
- ❑0 No
- ❑1 Yes

FIBROSIS

PRESENT
- ❑0 No
- ❑1 Yes

CALCIFICATIONS
- ❑0 No
- ❑1 Yes

SQUAMOUS METAPLASIA

PRESENT
- ❑0 No
- ❑1 Yes

FOCI
- ❑1 1
- ❑2 2-5
- ❑3 6+

FIBROADENOMA

PRESENT
- ❑0 No
- ❑1 Yes

FOCI
- ❑1 1
- ❑2 2-5
- ❑3 6+

SIZE
___ . ___ cm

CALCIFICATIONS
- ❑0 No
- ❑1 Yes

BLOCK
_____

Associated Findings Within Lesion

HYPERPLASIA
- ❑0 No
- ❑1 Mild
- ❑2 Moderate/Florid

ADENOSIS
- ❑0 No
- ❑1 Yes

ADH
- ❑0 No
- ❑1 Yes

ALH
- ❑0 No
- ❑1 Yes

DCIS
- ❑0 No
- ❑1 Yes

LCIS
- ❑0 No
- ❑1 Yes

CYSTIC CHANGES
- ❑0 No
- ❑1 Yes

PLACE LABEL HERE

CELLULAR STROMA
- ❑0 No
- ❑1 Yes

SIMPLE ADENOSIS

PRESENT	FOCI	SIZE	CALCIFICATIONS	BLOCK
☐ 0 No	☐ 1 1	☐ 1 ≤ 0.3 cm	☐ 0 No	_____
☐ 1 Mild	☐ 2 2-5	☐ 2 0.3 - 0.9 cm	☐ 1 Yes	
☐ 2 Moderate/Florid	☐ 3 6+	☐ 3 1.0 - 1.9 cm		
		☐ 4 ≥ 2.0 cm		

Associated Findings Within Lesion

ADH	ALH	DCIS	LCIS
☐ 0 No	☐ 0 No	☐ 0 No	☐ 0 No
☐ 1 Yes	☐ 1 Yes	☐ 1 Yes	☐ 1 Yes

SCLEROSING ADENOSIS

PRESENT	FOCI	SIZE	CALCIFICATIONS	BLOCK
☐ 0 No	☐ 1 1	☐ 1 ≤ 0.3 cm	☐ 0 No	_____
☐ 1 Mild	☐ 2 2-5	☐ 2 0.3 - 0.9 cm	☐ 1 Yes	
☐ 2 Moderate/Florid	☐ 3 6+	☐ 3 1.0 - 1.9 cm		
		☐ 4 ≥ 2.0 cm		

Associated Findings Within Lesion

ADH	ALH	DCIS	LCIS
☐ 0 No	☐ 0 No	☐ 0 No	☐ 0 No
☐ 1 Yes	☐ 1 Yes	☐ 1 Yes	☐ 1 Yes

APOCRINE ADENOSIS

PRESENT	FOCI	SIZE	CALCIFICATIONS	BLOCK
☐ 0 No	☐ 1 1	☐ 1 ≤ 0.3 cm	☐ 0 No	_____
☐ 1 Mild	☐ 2 2-5	☐ 2 0.3 - 0.9 cm	☐ 1 Yes	
☐ 2 Moderate/Florid	☐ 3 6+	☐ 3 1.0 - 1.9 cm		
		☐ 4 ≥ 2.0 cm		

Associated Findings Within Lesion

ADH	ALH	DCIS	LCIS
☐ 0 No	☐ 0 No	☐ 0 No	☐ 0 No
☐ 1 Yes	☐ 1 Yes	☐ 1 Yes	☐ 1 Yes

PLACE LABEL HERE

HYPERPLASIA WITHOUT ATYPIA (USUAL TYPE)

PRESENT	FOCI	SIZE	CALCIFICATIONS	BLOCK
☐0 No	☐1 1	☐1 ≤ 0.3 cm	☐0 No	_____
☐1 Mild	☐2 2-5	☐2 0.3 - 0.9 cm	☐1 Yes	
☐2 Moderate/Florid	☐3 6+	☐3 1.0 - 1.9 cm		
		☐4 ≥ 2.0 cm		

HYPERPLASIA WITHOUT ATYPIA (APOCRINE TYPE)

PRESENT	FOCI	SIZE	CALCIFICATIONS	BLOCK
☐0 No	☐1 1	☐1 ≤ 0.3 cm	☐0 No	_____
☐1 Mild	☐2 2-5	☐2 0.3 - 0.9 cm	☐1 Yes	
☐2 Moderate/Florid	☐3 6+	☐3 1.0 - 1.9 cm		
		☐4 ≥ 2.0 cm		

ADH*

PRESENT	FOCI	SIZE	CALCIFICATIONS	BLOCK
☐0 No	☐1 1	___ . ___ cm	☐0 No	_____
☐1 Yes	☐2 2-5		☐1 Yes	
	☐3 6+			

ALH*

PRESENT	FOCI	SIZE	CALCIFICATIONS	BLOCK
☐0 No	☐1 1	___ . ___ cm	☐0 No	_____
☐1 Yes	☐2 2-5		☐1 Yes	
	☐3 6+			

PAPILLOMA

PRESENT	FOCI	SIZE	CALCIFICATIONS	BLOCK
☐0 No	☐1 1	___ . ___ cm	☐0 No	_____
☐1 Yes	☐2 2-5		☐1 Yes	
	☐3 6+			

Associated Findings Within Lesion

HYPERPLASIA	ADENOSIS	ADH	ALH	DCIS	LCIS
☐0 No	☐0 No	☐0 No	☐0 No	☐0 No	☐0 No
☐1 Mild	☐1 Yes	☐1 Yes	☐1 Yes	☐1 Yes	☐1 Yes
☐2 Moderate/Florid					

PLACE LABEL HERE

RADIAL SCAR

PRESENT	FOCI	SIZE	CALCIFICATIONS	BLOCK
❑$_0$ No	❑$_1$ 1	___ . ___ cm	❑$_0$ No	_____
❑$_1$ Yes	❑$_2$ 2-5		❑$_1$ Yes	
	❑$_3$ 6+			

Associated Findings Within Lesion

HYPERPLASIA	ADENOSIS	ADH	ALH	DCIS	LCIS
❑$_0$ No	❑$_0$ No	❑$_0$ No	❑$_0$ No	❑$_0$ No	❑$_0$ No
❑$_1$ Mild	❑$_1$ Yes	❑$_1$ Yes	❑$_1$ Yes	❑$_1$ Yes	❑$_1$ Yes
❑$_2$ Moderate/Florid					

LCIS*

PRESENT	FOCI	SIZE	CALCIFICATIONS	BLOCK
❑$_0$ No	❑$_1$ 1	___ . ___ cm	❑$_0$ No	_____
❑$_1$ Yes	❑$_2$ 2-5		❑$_1$ Yes	
	❑$_3$ 6+			

DCIS*

PRESENT	FOCI	SIZE	CALCIFICATIONS	BLOCK
❑$_0$ No	❑$_1$ 1	___ . ___ cm	❑$_0$ No	_____
❑$_1$ Yes	❑$_2$ 2-5		❑$_1$ Yes	
	❑$_3$ 6+			

INVASIVE CARCINOMA

PRESENT	FOCI	SIZE	BLOCK
❑$_0$ No	❑$_1$ 1	___ . ___ cm	_____
❑$_1$ Yes	❑$_2$ 2-5		
	❑$_3$ 6+		

PLACE LABEL HERE

LYMPHOCYTIC INFILTRATE

PRESENT	FOCI	CALCIFICATIONS	BLOCK
☐0 No	☐1 1	☐0 No	_____
☐1 Yes	☐2 2-5	☐1 Yes	
	☐3 6+		

Associated Findings With Lesion

NORMAL LOBULES	DUCT ECTASIA	DCIS	CYST(S)	OTHER _____
☐0 No	☐0 No	☐0 No	☐0 No	☐0 No
☐1 Yes	☐1 Yes	☐1 Yes	☐1 Yes	☐1 Yes

PHYLLODES TUMOR

PRESENT	CELLULAR STROMA	STROMAL OVERGROWTH	SIZE	MITOSIS
☐0 No	☐0 No	☐0 No	___.___ cm	_____ Count / 10 HPF
☐1 Yes	☐1 Yes	☐1 Yes		

HYPERPLASIA	MARGINS	TUMOR TYPE
☐0 No	☐0 Negative	☐1 Benign
☐1 Mild	☐1 Positive	☐2 Indeterminate
☐2 Moderate/Florid	Distance: ___.___ cm	☐3 Malignant

OTHER (please specify) _____

PRESENT	FOCI	SIZE	CALCIFICATIONS	BLOCK
☐0 No	☐1 1	___.___ cm	☐0 No	_____
☐1 Yes	☐2 2-5	☐9.9 N/A	☐1 Yes	
	☐3 6+			

Associated Findings Within Lesion

HYPERPLASIA	ADENOSIS	ADH	ALH	DCIS	LCIS
☐0 No	☐0 No	☐0 No	☐0 No	☐0 No	☐0 No
☐1 Mild	☐1 Yes	☐1 Yes	☐1 Yes	☐1 Yes	☐1 Yes
☐2 Moderate/Florid					

*ADH: Atypical Ductal Hyperplasia
ALH: Atypical Lobular Hyperplasia
LCIS: Lobular Carcinoma In Situ
DCIS: Ductal Carcinoma In Situ

PLACE LABEL HERE

WOMEN'S HEALTH STUDY

CONFIDENTIAL LOCATOR FORM

OFFFICE USE ONLY	
Date survey mailed	
MRN	
Index Path Report #	

If any of the below listed items in the left-hand column are incorrect, please make the appropriate changes in the right column next to that item. All information you provide on this form and on the Women's Health Study Survey will be kept confidential.

VARIABLE	PRINTED	CORRECTED
First Name	«FIRST_NM»	
Last Name	«LAST_NM»	
Maiden Name	«MAIDEN_N»	
Spouse's Name	«SPOUSE_N»	
Your Birth Date	«BTH_DT»	
Street Address	«ADDR1» «ADDR2»	
City State Zip Code	«CITY», «STATE» «ZIP_CD»	
Home Phone	«HOMEPH2X»	
Work Phone	«WORKPH2X»	
Emergency Phone	«EMERPH2X»	
Social Security	«SSN2X»	
Marital Status	«MAR_STAT»	
Primary Care Physician's Name	«PRICRNAME»	
Primary Care Physician's Address	«PRICRADDR»	
Primary Care Physician's City, State and Zip Code	«PRICITY» «PRIST» «PRIZIP»	

Study ID _____

WOMEN'S HEALTH STUDY SURVEY

This survey will ask you questions about your medical, pregnancy, menstrual, menopausal, contraceptive, surgical, lifestyle, work and family history and general background information. For questions listed on the left side of the page, please record or circle your answer in the right-hand column. For questions listed in a table, please record or circle your responses in the appropriate area in the table. All information you provide will be kept confidential. Answer each question as best you can. The information you provide is very valuable to helping us better understand and improve women's health.

Medical History

For this first section, we would like to get some information about your medical history.

1. Has a doctor ever told you had any of the following conditions? Please place a check next to all that apply.

Chicken pox	_____	Hyperthyroid disease	_____	Stroke	_____
Measles	_____	Hypothyroid disease	_____	Transient-ischemic attack	_____
Mumps	_____	Parathyroid disease	_____	Food allergies	_____
Poliomyelitis	_____	Pituitary disease	_____	Drug allergies	_____
Typhoid	_____	Hypoglycemia	_____	Hay fever	
Shingles zoster	_____	Vitamin B1 deficiency	_____	Other allergies	_____
Herpes simplex	_____	Vitamin B12 deficiency	_____	Epilepsy/Seizures/	
Pneumonia	_____	Folate deficiency	_____	Convulsions	_____
Mononucleosis	_____	Asthma	_____	Psychiatric conditions	
Meningitis	_____	Other respiratory disease		Requiring medicine	_____
Encephalitis	_____	(not asthma)	_____		
Multiple sclerosis	_____	Migraine headaches	_____	Specify _____	
Toxoplasmosis	_____	Clinical depression	_____	Any type of cancer	_____
Tuberculosis	_____	Hypertension			
Heart disease	_____	(high blood pressure)	_____	Specify _____	
Diabetes	_____	Anemia or other blood		Other medical problems	_____
Stomach/Digestive		Disorder	_____		
Disorder	_____	Liver disease	_____	Specify _____	
Osteoarthritis	_____	Kidney disease	_____		
Rheumatoid arthritis	_____	Immune system disorder	_____	Specify _____	

2. Have you ever been exposed to medical radiation as a treatment (not for diagnosis) for the following conditions:

a. Tuberculosis	0. No	1. Yes	9. Don't Know
b. Postpartum mastitis (inflammation of the breast)	0. No	1. Yes	9. Don't Know
c. Other benign breast condition	0. No	1. Yes	9. Don't Know
d. Ankylosing spondylitis (type of rheumatoid arthritis)	0. No	1. Yes	9. Don't Know
e. Scoliosis (curved spine)	0. No	1. Yes	9. Don't Know
f. Tinea capitis (ringworm of the scalp)	0. No	1. Yes	9. Don't Know
g. Enlarged thymus	0. No	1. Yes	9. Don't Know
h. Skin hemangioma (benign tumor on the skin)	0. No	1. Yes	9. Don't Know
i. Childhood cancer (e.g., leukemia)	0. No	1. Yes	9. Don't Know
j. Hodgkin's disease	0. No	1. Yes	9. Don't Know

Study ID ________

Pregnancy History

The next section asks about your pregnancy history. This includes live births, stillbirths, miscarriages, abortions, and tubal and other ectopic pregnancies. The medical changes your body goes through during pregnancy may effect your health later on.

1. Have you ever been pregnant?

   0. No
   1. Yes

   (If NO, skip the remainder of this section and go to to the <u>Menstrual and Menopausal History</u> section.)

2. For each pregnancy you have ever had, please record your age at the time of the pregnancy, the outcome of the pregnancy, the total length of time in weeks or months for that pregnancy.

	1st Pregnancy	2nd Pregnancy	3rd Pregnancy
Your age at this pregnancy	_____ age in years	_____ age in years	_____ age in years
Outcome of Pregnancy	1. Single Live Birth 2. Multiple Birth, Any Living 3. Multiple Birth, None Living 4. Stillbirth 5. Miscarriage, Doctor Confirmed 6. Miscarriage, Not Confirmed 7. Induced Abortion 8. Ectopic or Tubal Pregnancy	1. Single Live Birth 2. Multiple Birth, Any Living 3. Multiple Birth, None Living 4. Stillbirth 5. Miscarriage, Doctor Confirmed 6. Miscarriage, Not Confirmed 7. Induced Abortion 8. Ectopic or Tubal Pregnancy	1. Single Live Birth 2. Multiple Birth, Any Living 3. Multiple Birth, None Living 4. Stillbirth 5. Miscarriage, Doctor Confirmed 6. Miscarriage, Not Confirmed 7. Induced Abortion 8. Ectopic or Tubal Pregnancy
Length of Pregnancy	_____ weeks **OR** _____ months	_____ weeks **OR** _____ months	_____ weeks **OR** _____ months
Did you breast feed? (IF NO or NOT APPLICABLE, skip to next pregnancy.)	0. No 1. Yes 8. Not Applicable	0. No 1. Yes 8. Not Applicable	0. No 1. Yes 8. Not Applicable
Did you supplement breast feeding with infant formula where the child received more than half of its food from formula?	0. No 1. Yes 9. Don't Know	0. No 1. Yes 9. Don't Know	0. No 1. Yes 9. Don't Know
How old was the child when you began supplementing with formula?	_____ weeks **OR** _____ months	_____ weeks **OR** _____ months	_____ weeks **OR** _____ months
Did you breast feed using both breasts equally, more use of the left breast, or more use of the right breast?	1. Equal 2. Left 3. Right 9. Don't Know	1. Equal 2. Left 3. Right 9. Don't Know	1. Equal 2. Left 3. Right 9. Don't Know
How old was the child when you stopped breast feeding completely?	_____ weeks **OR** _____ months	_____ weeks **OR** _____ months	_____ weeks **OR** _____ months

Study ID ________

Pregnancy History (cont.)

	4th Pregnancy	5th Pregnancy	6th Pregnancy
Your age at this pregnancy	______ age in years	______ age in years	______ age in years
Outcome of Pregnancy	1. Single Live Birth 2. Multiple Birth, Any Living 3. Multiple Birth, None Living 4. Stillbirth 5. Miscarriage, Doctor Confirmed 6. Miscarriage, Not Confirmed 7. Induced Abortion 8. Ectopic or Tubal Pregnancy	1. Single Live Birth 2. Multiple Birth, Any Living 3. Multiple Birth, None Living 4. Stillbirth 5. Miscarriage, Doctor Confirmed 6. Miscarriage, Not Confirmed 7. Induced Abortion 8. Ectopic or Tubal Pregnancy	1. Single Live Birth 2. Multiple Birth, Any Living 3. Multiple Birth, None Living 4. Stillbirth 5. Miscarriage, Doctor Confirmed 6. Miscarriage, Not Confirmed 7. Induced Abortion 8. Ectopic or Tubal Pregnancy
Length of Pregnancy	______ weeks **OR** ______ months	______ weeks **OR** ______ months	______ weeks **OR** ______ months
Did you breast feed? (IF NO or NOT APPLICABLE, skip to next pregnancy.)	0. No 1. Yes 9. Not Applicable	0. No 1. Yes 9. Not Applicable	0. No 1. Yes 9. Not Applicable
Did you supplement breast feeding with infant formula where the child received more than half of its food from formula?	0. No 1. Yes 9. Don't Know	0. No 1. Yes 9. Don't Know	0. No 1. Yes 9. Don't Know
How old was the child when you began supplementing with formula?	______ weeks **OR** ______ months	______ weeks **OR** ______ months	______ weeks **OR** ______ months
Did you breast feed using both breasts equally, more use of the left breast, or more use of the right breast?	1. Equal 2. Left 3. Right 9. Don't Know	1. Equal 2. Left 3. Right 9. Don't Know	1. Equal 2. Left 3. Right 9. Don't Know
How old was the child when you stopped breast feeding completely?	______ weeks **OR** ______ months	______ weeks **OR** ______ months	______ weeks **OR** ______ months

Menstrual and Menopausal History

Menses, or when you started having menstrual periods, and menopause, when you stop having periods, are very important times in a women's life and the timing of these events can lead to other body changes.

1. At what age or year did you have your first menstrual period?

   _____ Age **OR** _____ Year

2. Have your periods ever been regular during times when you were **not** using birth control pills, shots, or implants such as Norplant?

   0. No
   1. Yes

   (If NO, skip to question 5.)

3. If your periods did became regular, at what age or year did this occur – that is could you predict within one week when your next menstrual period would begin?

   _____ Age **OR** _____ Year

4. Now we want to find out about how frequently you had menstrual periods during each decade of your life at times when you were **not** using birth control pills, shots, or implants, were **not** using fertility drugs and were **not** pregnant or nursing.

DECADE	**NOT** including times when you were pregnant or nursing, or using birth control pills, shots or implants, or fertility drugs, were your periods regular enough so you could usually predict within one week when your next period would come?	On average, how long was your menstrual cycle? That is, how many days were there between the first day of one period and the first day of the next?	On average, when you had Your period, how heavy were Most days of your menstrual Flow?
Teens	0. No 1. Yes 8. Not Applicable 9. Don't Know	1. Less than 21 days 2. 21 – 25 days 3. 26 – 31 days 4. 32 – 39 days 5. 40 – 50 days 6. More than 50 days 7. Too irregular 9. Don't Know	1. Light 2. Medium 3. Heavy 4. Very Heavy 9. Don't Know
20 – 29	0. No 1. Yes 8. Not Applicable 9. Don't Know	1. Less than 21 days 2. 21 – 25 days 3. 26 – 31 days 4. 32 – 39 days 5. 40 – 50 days 6. More than 50 days 7. Too irregular 9. Don't Know	1. Light 2. Medium 3. Heavy 4. Very Heavy 9. Don't Know

Menstrual History (cont.)

DECADE	**NOT** including times when you were pregnant or nursing, or using birth control pills, shots or implants, or fertility drugs, were your periods regular enough so you could usually predict within one week when your next period would come?	On average, how long was your menstrual cycle? That is, how many days were there between the first day of one period and the first day of the next?	On average, when you had your period, how heavy were most days of your menstrual flow?
30 – 39	0. No 1. Yes 8. Not Applicable 9. Don't Know	1. Less than 21 days 2. 21 – 25 days 3. 26 – 31 days 4. 32 – 39 days 5. 40 – 50 days 6. More than 50 days 7. Too irregular 9. Don't Know	1. Light 2. Medium 3. Heavy 4. Very Heavy 9. Don't Know
40 – 49	0. No 1. Yes 8. Not Applicable 9. Don't Know	1. Less than 21 days 2. 21 – 25 days 3. 26 – 31 days 4. 32 – 39 days 5. 40 – 50 days 6. More than 50 days 7. Too irregular 9. Don't Know	1. Light 2. Medium 3. Heavy 4. Very Heavy 9. Don't Know
50 – 59	0. No 1. Yes 8. Not Applicable 9. Don't Know	1. Less than 21 days 2. 21 – 25 days 3. 26 – 31 days 4. 32 – 39 days 5. 40 – 50 days 6. More than 50 days 7. Too irregular 9. Don't Know	1. Light 2. Medium 3. Heavy 4. Very Heavy 9. Don't Know

5. What is you current menstrual status?

If you answered 1, 2, 8, or 9, skip the remainder of this section and go to the <u>Other Menstrual Conditions</u> section.

1. Still having periods - not going through menopause (the change of life)
2. Still having periods - possibly going through menopause
3. Going through menopause
4. Still having periods - on hormone replacement therapy
5. Periods stopped by themselves (natural menopause)
6. Periods stopped by surgical removal of uterus (womb), or both ovaries (surgical menopause)
7. Periods stopped by radiation or chemotherapy
8. Periods stopped by contraceptive hormone use
9. Periods stopped by other medical condition

6. If you have reached menopause, that is your menstrual periods have ended permanently, what was your last period?

__ __ / __ __
month year

7. Before you reached menopause, did you ever use hormones, either after female surgery or to treat or prevent symptoms of menopause?

If NO, skip to question 8.

0. No
1. Yes
8. Not Applicable
9. Don't Know

8. Using these hormones may cause a woman to keep having periods. What was the date of your last menstrual period **<u>before</u>** beginning hormone use?

__ __ / __ __
month year

9. Hot flashes, night sweats, and other symptoms sometimes occur around the time of menopause. Around this time and up to 5 years prior to menopause, did you have hot flashes, night sweats, or other symptoms of menopause?

If NO, skip to question 11.

0. No
1. Yes
9. Don't Know

10. If you had these symptoms, how old were you when they began?

_____
Age

11. Did your doctor or other health care professional ever tell you that you had completed menopause or the change of life?

0. No
1. Yes
9. Don't Know

If NO, skip question 12 and go to the <u>Other Menstrual Conditions</u> section.

12. How old were you when your doctor or other health professional told you this?

_____
Age

Other Menstrual Conditions

1. Now we will ask you about certain menstrual diseases, conditions, and surgeries that you may have had.

CONDITION	Did a doctor or other health care professional ever tell you that you had any of the following conditions?	At what age did a doctor or other health care professional first tell you that you had this condition?	Have you ever been hospitalized, had surgery, or other procedures, or been prescribed medication for this condition?
1st	Cysts on the ovary? 0. No 1. Yes	_____ Age in years	0. No 1. Yes What type of treatment? SPECIFY_____ 9. Don't Know
2nd	Endometriosis ? 0. No 1. Yes	_____ Age in years	0. No 1. Yes What type of treatment? SPECIFY_____ 9. Don't Know
3rd	Fibroids, fibroid tumors, or uterine fibroids? 0. No 1. Yes	_____ Age in years	0. No 1. Yes What type of treatment? SPECIFY_____ 9. Don't Know
4th	Pelvic inflammatory disease or PID? 0. No 1. Yes	_____ Age in years	0. No 1. Yes What type of treatment? SPECIFY_____ 9. Don't Know

2. Have you ever had a hysterectomy – that is, did you have your womb (uterus) removed, causing your menstrual periods to stop?

   If NO, skip to question 4.

   0. No
   1. Yes
   9. Don't Know

3. What month and year did you have the hysterectomy?

   __ __ / __ __
   month year

4. Have you ever had any surgery involving partial or total removal of one or both of your ovaries? Please include any surgeries on your ovaries at the time of hysterectomy and any cysts removed from the ovaries.

   (IF NO, skip the remainder of this section and go to the <u>Contraceptive History</u> section.)

   0. No
   1. Yes
   9. Don't Know

5. How many ovarian surgeries did you have?

   _____
   Number of surgeries

6. Now we would like some additional information about these surgeries.

SURGERY	What month and year did you have the surgeries?	What exactly was **<u>removed</u>** during the surgery?
1st	__ __ / __ __ Month / Year	1. One Ovary (total) 2. One Ovary (partial) 3. Both Ovaries (total) 4. Both Ovaries (partial) 5. Both Ovaries (one total, one partial) 9. Don't Know
2nd	__ __ / __ __ Month / Year	1. One Ovary (total) 2. One Ovary (partial) 3. Both Ovaries (total) 4. Both Ovaries (partial) 5. Both Ovaries (one total, one partial) 9. Don't Know
3rd	__ __ / __ __ Month / Year	1. One Ovary (total) 2. One Ovary (partial) 3. Both Ovaries (total) 4. Both Ovaries (partial) 5. Both Ovaries (one total, one partial) 9. Don't Know

Contraceptive History

The next questions are about methods of family planning or birth control that you or your partner may have used.

1. Have you or any partner ever used any methods of birth control?

   (IF NO, skip the remainder of this section and go to the Hormone Medication History section.)

   0. No
   1. Yes
   9. Don't Know

2. Have you and any partner ever used any of the following birth control methods:

a. Condoms or rubbers	0. No 1. Yes 9. Don't Know
b. Diaphragm, cap, or sponge	0. No 1. Yes 9. Don't Know
c. Foam, jelly, cream, or suppositories	0. No 1. Yes 9. Don't Know
d. Rhythm, calendar, ovulation, or withdrawal	0. No 1. Yes 9. Don't Know
e. Tubes tied, tubal sterilization, female sterilization	0. No 1. Yes 9. Don't Know
f. Vasectomy or male sterilization or surgery	0. No 1. Yes 9. Don't Know
g. Birth control pills (BCs)	0. No 1. Yes 9. Don't Know
h. Birth control shots or injections (e.g., Depo-Prevera)	0. No 1. Yes 9. Don't Know
i. Subdermal (under the skin) implants (e.g., Norplant)	0. No 1. Yes 9. Don't Know
j. IUD or intrauterine device such as a loop or coil	0. No 1. Yes 9. Don't Know
k. Any other method	0. No 1. Yes (Specify) _____

3. We are particularly interested in any birth control methods that you may have used that contained hormones. Certain hormones found in contraceptives may change the amount of other chemicals in your body.

   If you answered **YES to either g, h, OR i** on the previous page, please answer the following questions.

   If you answered NO to g, h, AND i on the previous page, skip the remainder of this section and go to the Hormone Medication History section.

TYPE	DECADE	What type of contraceptives did you take during this decade?	How many years did you take this type of contraceptives during this decade?
1st	1960 – 1969	1. None taken 2. Birth control pills 9. Don't know	_____ years
1st	1970 – 1979	1. None taken 2. Birth control pills 3. Birth control shots or injections 9. Don't Know	_____ years
2nd	1970 – 1979	1. None taken 2. Birth control pills 3. Birth control shots or injections 9. Don't Know	_____ years
1st	1980 – 1989	1. None taken 2. Birth control pills 3. Birth control shots or injections 4. Subdermal implants 9. Don't Know	_____ years
2nd	1980 – 1989	1. None taken 2. Birth control pills 3. Birth control shots or injections 4. Subdermal implants 9. Don't Know	_____ years
1st	1990 – 1999	1. None taken 2. Birth control pills 3. Birth control shots or injections 4. Subdermal implants 9. Don't Know	_____ years
2nd	1990 – 1999	1. None taken 2. Birth control pills 3. Birth control shots or injections 4. Subdermal implants 9. Don't Know	_____ years

Hormone Medication History

We would like to ask you questions about any hormone medications that you might have used before or around menopause. Please do not include any birth control pills, shots, or implants that we've already mentioned.

1. Have you ever used any hormone medications **before the start of menopause** that were not birth control pills, shots or implants?

   0. No
   1. Yes
   9. Don't Know

   (If NO, skip to question 3.)

2. For each type of hormone medication you took **before menopause**, please record the type of hormone medications you took, reasons for taking that hormone and the dates you started and stopped taking it. Please do not include any birth control pills, shots, or implants that you have already mentioned.

TYPE	What type of hormones did you take?	Which of the following were reasons you took this medication? Please circle all that apply for each medication.	What month and year did you START taking this hormone medication?	What month and year did you STOP taking this hormone medication?
1st	_____	1. Acne 2. Excessive hair growth or hirsutism 3. Endometriosis 4. To promote pregnancy/fertility 5. To prevent miscarriage 6. Problems with ovaries (i.e., cysts) 7. Polycystic ovarian disease 8. Breast tenderness or pain 9. Benign breast lumps or cysts 10. Premenstrual syndrome (PMS) 11. Severe menstrual cramps 12. Heavy menstrual bleeding 13. Other reason	__ __ / __ __ month year	__ __ / __ __ month year
2nd	_____	1. Acne 2. Excessive hair growth or hirsutism 3. Endometriosis 4. To promote pregnancy/fertility 5. To prevent miscarriage 6. Problems with ovaries (i.e., cysts) 7. Polycystic ovarian disease 8. Breast tenderness or pain 9. Benign breast lumps or cysts 10. Premenstrual syndrome (PMS) 11. Severe menstrual cramps 12. Heavy menstrual bleeding 13. Other reason	__ __ / __ __ month year	__ __ / __ __ month year

3. Have you ever used any hormone medications **around the time of menopause**?
   0. No
   1. Yes
   8. Not Applicable
   9. Don't Know

   (If NO or NOT APPLICABLE, skip the remainder of this section and go to the Exercise section.)

4. For each type of hormone medication you took **around the time of menopause**, please record the type of hormone medications you took, reasons for taking that hormone and the dates you started and stopped taking it.

TYPE	What type of hormones did you take?	Which of the following were reasons you took this medication? Please circle all that apply for each medication.	What month and year did you START taking this hormone medication?	What month and year did you STOP taking this hormone medication?
1st	_____	1. Irregular menstrual bleeding 2. Heavy menstrual bleeding 3. Delay of menopause/change of life 4. Hot flashes 5. Sweating 6. Vaginal dryness 7. Bladder problems 8. Depression or anxiety 9. After uterus or ovary removal 10. Prevention/treatment for bone loss 11. Prevention/treatment of heart disease 12. Other reasons	__ __ / __ __ month year	__ __ / __ __ month year
2nd	_____	1. Irregular menstrual bleeding 2. Heavy menstrual bleeding 3. Delay of menopause/change of life 4. Hot flashes 5. Sweating 6. Vaginal dryness 7. Bladder problems 8. Depression or anxiety 9. After uterus or ovary removal 10. Prevention/treatment for bone loss 11. Prevention/treatment of heart disease 12. Other reasons	__ __ / __ __ month year	__ __ / __ __ month year

Body

1. For the each time period listed, please record your weight group and average weight, if known, and the picture that best shows your body size at that time. How your body changes through your life can be important for

Time Period	Record your weight group AND weight in pounds for each period. Record "DK" (Don't Know) if your weight is unknown.	Picture #
Late elementary school (ages 8 –10)	1. Underweight 2. Slightly underweight 3. Average weight 4. Slightly overweight 5. Overweight 9. Don't Know	_____
Middle/Junior high school (ages 11-13)	1. Underweight 2. Slightly underweight 3. Average weight 4. Slightly overweight 5. Overweight 9. Don't Know	_____
High school/Late teens (ages 14-19)	1. Underweight 2. Slightly underweight 3. Average weight 4. Slightly overweight **AND** _____ pounds 5. Overweight 9. Don't Know	_____
20 – 24 years old	1. Underweight 2. Slightly underweight 3. Average weight 4. Slightly overweight **AND** _____ pounds 5. Overweight 9. Don't Know	_____
25 – 29 years old	1. Underweight 2. Slightly underweight 3. Average weight 4. Slightly overweight **AND** _____ pounds 5. Overweight 9. Don't Know	_____
30 – 34 years old	1. Underweight 2. Average weight 3. Slightly overweight **AND** _____ pounds 4. Very overweight 9. Don't Know	_____

Time Period	Record your weight group AND weight in pounds for each period. Record DK (Don't Know) if your weight is unknown.	Picture #
35 – 39 years old	1. Underweight 2. Slightly underweight 3. Average weight 4. Slightly overweight **AND** _____ 5. Overweight pounds 9. Don't Know	_____
40 – 44 years old	1. Underweight 2. Slightly underweight 3. Average weight 4. Slightly overweight **AND** _____ 5. Overweight pounds 9. Don't Know	_____
45 – 49 years old	1. Underweight 2. Slightly underweight 3. Average weight 4. Slightly overweight **AND** _____ 5. Overweight pounds 9. Don't Know	_____
50 – 59 years old	1. Underweight 2. Slightly underweight 3. Average weight 4. Slightly overweight **AND** _____ 5. Overweight pounds 9. Don't Know	_____
60 – 69 years old	1. Underweight 2. Slightly underweight 3. Average weight 4. Slightly overweight **AND** _____ 5. Overweight pounds 9. Don't Know	_____
70 – 79 years old	1. Underweight 2. Slightly underweight 3. Average weight 4. Slightly overweight **AND** _____ 5. Overweight pounds 9. Don't Know	_____
80 – 89 years old	1. Underweight 2. Slightly underweight 3. Average weight 4. Slightly overweight **AND** _____ 5. Overweight pounds 9. Don't Know	_____

3. Were you teased in **elementary school** for being underweight?	0. No 1. Yes
4. Were you teased in **elementary school** for being overweight?	0. No 1. Yes
5. Were you teased in **middle school** for being underweight?	0. No 1. Yes
6. Were you teased in **middle school** for being overweight?	0. No 1. Yes
7. Were you teased in **high school** for being underweight?	0. No 1. Yes
8. Were you teased in **high school** for being overweight?	0. No 1. Yes
9. What is your current height in feet and inches?	_____ feet _____ inches
10. Are you left-handed, right-handed, or able to use both hands equally (ambidextrous)?	1. Left handed 2. Right handed 3. Use both hands equally

Exercise

1. Please tell us about your physical activity history, beginning with the activity you participated in at the youngest age, including your school years.

Time Period	What is the highest level of exercise did you participate in on a regular basis?	On average, how many days per week did you participate in this activity during this time period?
Elementary school (ages 5-10)	1. No regular exercise 2. Moderate exercise (walking, dancing) 3. Vigorous exercise (tennis, running)	_____ hours
Middle/Junior high school (ages 11-14)	1. No regular exercise 2. Moderate exercise (walking, dancing) 3. Vigorous exercise (tennis, running)	_____ hours
High school/Late teens (ages 15-19)	1. No regular exercise 2. Moderate exercise (walking, dancing) 3. Vigorous exercise (tennis, running)	_____ hours
20 – 29	1. No regular exercise 2. Moderate exercise (walking, dancing) 3. Vigorous exercise (tennis, running)	_____ hours
30 – 39	1. No regular exercise 2. Moderate exercise (walking, dancing) 3. Vigorous exercise (tennis, running)	_____ hours
40 – 49	1. No regular exercise 2. Moderate exercise (walking, dancing) 3. Vigorous exercise (tennis, running)	_____ hours
50 – 59	1. No regular exercise 2. Moderate exercise (walking, dancing) 3. Vigorous exercise (tennis, running)	_____ hours
60 – 69	1. No regular exercise 2. Moderate exercise (walking, dancing) 3. Vigorous exercise (tennis, running)	_____ hours
70 – 79	1. No regular exercise 2. Moderate exercise (walking, dancing) 3. Vigorous exercise (tennis, running)	_____ hours
80 – 89	1. No regular exercise 2. Moderate exercise (walking, dancing) 3. Vigorous exercise (tennis, running)	_____ hours

Alcohol

Now we would like some information on your use of alcoholic beverages. Patterns of alcohol intake have been shown to be related to certain diseases.

1. Have you ever drunk alcoholic beverages, such as beer, wine, or mixed drinks at least once a month for a period of 6 months or more?
   0. No
   1. Yes

   (If NO, skip the remainder of this section and go to the Tobacco section.)

2. How old were you when you drank your first alcoholic beverages at least once a month for six months or more? _____ Age

3. Now we would like to find out about your average drinking habits during each decade of your life.

DECADE	How many beers did you usually drink in a month?	How many glasses of wine did you usually drink in a month?	How many mixed drinks did you usually drink in a month?	Did your tend to spread your drinks throughout the month or did you tend to drink many drinks on a few occasions?
Teens	_____ Beers / month	_____ Glasses of Wine / month	_____ Mixed Drinks / month	1. Spread out 2. Many at once 9. Don't Know
20 – 29	_____ Beers / month	_____ Glasses of Wine / month	_____ Mixed Drinks / month	1. Spread out 2. Many at once 9. Don't Know
30 – 39	_____ Beers / month	_____ Glasses of Wine / month	_____ Mixed Drinks / month	1. Spread out 2. Many at once 9. Don't Know
40 – 49	_____ Beers / month	_____ Glasses of Wine / month	_____ Mixed Drinks / month	1. Spread out 2. Many at once 9. Don't Know
50 – 59	_____ Beers / month	_____ Glasses of Wine / month	_____ Mixed Drinks / month	1. Spread out 2. Many at once 9. Don't Know
60 – 69	_____ Beers / month	_____ Glasses of Wine / month	_____ Mixed Drinks / month	1. Spread out 2. Many at once 9. Don't Know
70 – 79	_____ Beers / month	_____ Glasses of Wine / month	_____ Mixed Drinks / month	1. Spread out 2. Many at once 9. Don't Know

Study ID _____

Tobacco

Now we would like some information on your use of tobacco products.

1. Have you ever smoked a total of 100 cigarettes or more in your lifetime?

   0. No
   1. Yes

   (If NO, skip to question 3.)

2. Now we would like to find out about your smoking habits during different time periods in your life.

Time Period	Were you smoking on a regularly during this time period?	How many years did you smoke during this time period?	On average, how many cigarettes did you smoke EACH DAY during the years you smoked ?	Did anyone living with you at that time smoke?	How many years during this period did they smoke?
Elementary school (ages 5-10)	0. No 1. Yes	_____ years	_____ # of cigarettes	0. No 1. Yes	_____ years
Middle/Junior high school (ages 11-14)	0. No 1. Yes	_____ years	_____ # of cigarettes	0. No 1. Yes	_____ years
High school/Late teens (ages 15-19)	0. No 1. Yes	_____ years	_____ # of cigarettes	0. No 1. Yes	_____ years
20 – 29	0. No 1. Yes	_____ years	_____ # of cigarettes	0. No 1. Yes	_____ years
30 – 39	0. No 1. Yes	_____ years	_____ # of cigarettes	0. No 1. Yes	_____ years
40 – 49	0. No 1. Yes	_____ years	_____ # of cigarettes	0. No 1. Yes	_____ years
50 – 59	0. No 1. Yes	_____ years	_____ # of cigarettes	0. No 1. Yes	_____ years
60 – 69	0. No 1. Yes	_____ years	_____ # of cigarettes	0. No 1. Yes	_____ years
70 – 79	0. No 1. Yes	_____ years	_____ # of cigarettes	0. No 1. Yes	_____ years
80 – 89	0. No 1. Yes	_____ years	_____ # of cigarettes	0. No 1. Yes	_____ years

3. Have you ever dipped snuff or chewed tobacco?

   0. No
   1. Yes

   (If NO, skip questions 4 and 5 and go to the Work History section.)

4. How many years did you dip snuff or chew tobacco?

   _____ years

5. How many times per week did you dip snuff or chew tobacco?

   _____ uses per week

APPENDIES

Work History

1. Have you ever worked outside the home for more than one month?

0. No
1. Yes

(If NO, skip the remainder of this section and go to the Farm and Garden History section.)

2. Please complete the following work history chart on page 21 – 25 as accurately as possible.

Column A	B	C	D	E	F	G	H
Did you ever work... (If **YES** in column A, answer questions in column B – H. If **NO**, skip to next job.)	In what year did you first work in this job?	In what year did you last work in this job?	Whenever you worked did you use protective gear, such as a mask, spray suit, gloves or boots?	Whenever you handled materials from this job, when did you usually switch to clean clothes?	Did you ever become sick due to these compounds? (If **NO**, skip to next job.)	Did you ever go to the doctor or clinic for this illness? (If **NO**, skip to next job.)	Did the doctor say your illness was related to this job?
..as a taxidermist? 0. No 1. Yes	19 ____	19____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a textile dryer? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a textile printer? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a brass foundry worker? 0. No 1. Yes	19 ____	____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a cosmetic maker or manufacturer? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say

Work History (cont.)

Column A	B	C	D	E	F	G	H
Did you ever work... (If **YES** in column A, answer questions in column B – H. If **NO**, skip to next job.)	In what year did you first work in this job?	In what year did you last work in this job?	Whenever you worked did you use protective gear, such as a mask, spray suit, gloves or boots?	Whenever you handled materials from this job, when did you usually switch to clean clothes?	Did you ever become sick due to these compounds? (If **NO**, skip to next job.)	Did you ever go to the doctor or clinic for this illness? (If **NO**, skip to next job.)	Did the doctor say your illness was related to this job?
..as an amalgam maker? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a gold extractor? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a bronzer? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a jeweler? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a photographer? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a tannery worker? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a wood preservative worker? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..in a meat packing or slaughtering plant? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say

Work History (cont.)

Column A	B	C	D	E	F	G	H
Did you ever work... (If **YES** in column A, answer questions in column B – H. If **NO**, skip to next job.)	In what year did you first work in this job?	In what year did you last work in this job?	Whenever you worked did you use protective gear, such as a mask, spray suit, gloves or boots?	Whenever you handled materials from this job, when did you usually switch to clean clothes?	Did you ever become sick due to these compounds? (If **NO**, skip to next job.)	Did you ever go to the doctor or clinic for this illness? (If **NO**, skip to next job.)	Did the doctor say your illness was related to this job?
..as a rubber worker? 0. No 1. Yes	19 ____	19____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a matchmaker? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a photographic chemical worker? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a plastic worker? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a carbon black worker? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a dental alloy worker? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a dental hygenist or dental assistant? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a dentist? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say

Work History (cont.)

Column A	B	C	D	E	F	G	H
Did you ever work... (If **YES** in column A, answer questions in column B – H. If **NO**, skip to next job.)	In what year did you first work in this job?	In what year did you last work in this job?	Whenever you worked did you use protective gear, such as a mask, spray suit, gloves or boots?	Whenever you handled materials from this job, when did you usually switch to clean clothes?	Did you ever become sick due to these compounds? (If **NO**, skip to next job.)	Did you ever go to the doctor or clinic for this illness? (If **NO**, skip to next job.)	Did the doctor say your illness was related to this job?
..as a deodorant maker? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a disinfectant worker? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as an embalmer? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a galvanizer? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..in a petroleum refinery? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a nickel worker? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..in a job with exposure to radiation? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..with asbestos? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say

Study ID _____

Column A	B	C	D	E	F	G	H
Did you ever work... (If **YES** in column A, answer questions in column B – H. If **NO**, skip to next job.)	In what year did you first work in this job?	In what year did you last work in this job?	Whenever you worked, did you use protective gear, such as a mask, spray suit, rubber gloves or boots?	Whenever you handled materials from this job, when did you usually switch to clean clothes?	Did you ever become sick due to these compounds? (If **NO**, skip to next job.)	Did you ever go to the doctor or clinic for this illness? (If **NO**, skip to next job.)	Did the doctor say your illness was related to this job?
..as a lacquerer? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..as a lacquer maker? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say
..on a farm? 0. No 1. Yes	19 ____	19 ____	0. No 1. Yes 2. Sometimes	1. Right away 2. End of work day 3. Later in day	0. No 1. Yes	0. No 1. Yes	1. Definitely 2. Possibly 3. Not Related 4. Did not say

Farm and Garden History

1. Have you ever gardened or lived on a farm for more than 6 months?

   (If NO, skip the remainder of this section and go to Family History section.)

   0. No
   1. Yes

2. Did you ever garden or live on a farm where insecticides (insect killing chemicals) were used on livestock, crops, farm buildings or lots?

   (If NO, skip to question 3.)

   0. No
   1. Yes

   a. What was the total number of years when insecticides were used?

   _____ years

   b. How many times per year were they used during this period?

   _____ times per year

3. Did you ever garden or live on a farm where herbicides (weed and plant killing chemicals) were used?

   (If NO, skip to question 4.)

   0. No
   1. Yes

   a. What was the total number of years when herbicides were used?

   _____ years

   b. How many times per year were they used during this period?

   _____ times per year

4. Did you ever garden or live on a farm where fungicides (fungus killing chemicals) were used?

   (If NO, skip the remainder of this section and go to the Family History section.)

   0. No
   1. Yes

   a. What was the total number of years when fungicides were used?

   _____ years

   b. How many times per year were they used during this period?

   _____ times per year

Family History

Now we would like to get some information on your family history. Male or female relatives who have had cancer, (a family history of cancer), has been shown to be related to some, but not all, cancers. We are interested in relatives who are living or dead who are related to you by blood.

1. Are you adopted?

0. No
1. Yes

(If YES, skip the reminder of this section and go to the Mother's Prenatal History section.)

3. First we would like to get some information about your **mother's and grandmothers'** history of cancer.

RELATIVE	Is this person still living?	How old was she at the time of death?	Did she ever have cancer?	What type(s) of cancer did she have? (circle all that apply)	At what age was this cancer first diagnosed?
Mother	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Mother's Mother	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Father's Mother	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age

Study ID _____

4. Now we would like to get some information about your **sisters'** history of cancer.

RELATIVE	Is this person still living?	How old was she at the time of death?	Did she ever have cancer?	What type(s) of cancer did she have? (circle all that apply)	At what age was this cancer first diagnosed?
Sister 1	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Sister 2	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Sister 3	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Sister 4	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Melanoma 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age

5. Now we would like to get some information about your **mother's sisters'** history of cancer.

RELATIVE	Is this person still living?	How old was she at the time of death?	Did she ever have cancer?	What type(s) of cancer did she have? (circle all that apply)	At what age was this cancer first diagnosed?
Mother's Sister 1	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Mother's Sister 2	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Mother's Sister 3	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Mother's Sister 4	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age

6. Now we would like to get some information about your **father's sisters'** history of cancer.

RELATIVE	Is this person still living?	How old was she at the time of death?	Did she ever have cancer?	What type(s) of cancer did she have? (circle all that apply)	At what age was this cancer first diagnosed?
Father's Sister 1	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Father's Sister 2	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Father's Sister 3	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Father's Sister 4	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age

7. Now we would like to get some information about your **daughters'** history of cancer.

RELATIVE	Is this person still living?	How old was she at the time of death?	Did she ever have cancer?	What type(s) of cancer did she have? (circle all that apply)	At what age was this cancer first diagnosed?
Daughter 1	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Daughter 2	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Daughter 3	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age
Daughter 4	0. No 1. Yes	_____ (if applicable)	0. No 1. Yes 9. Don't Know	1. Breast 2. Ovary 3. Cervical 4. Uterine 5. Unspecified female genital organs 6. Colorectal 7. Skin (melanoma) 8. Lung 9. Other-specify_____	_____ _____ _____ _____ _____ _____ _____ _____ _____ Age

Now we would like to get some information about anyone in your family who may have had prostate cancer.

8. Were any of your male relatives, specifically including your grandfathers, your father, your father's brothers, mother's brothers, and your brothers and sons ever diagnosed with prostate cancer?

0. No
1. Yes
9. Don't Know

(If you answered NO or DON'T KNOW to question 8, skip the reminder of this section and go to the <u>Mother's Prenatal History</u> section.)

9.

OFFICE USE ONLY	Which relative(s) was/were diagnosed with prostate cancer?	About how old was he when first diagnosed?
__ __		____ Age
__ __		____ Age
__ __		____ Age
__ __		____ Age
__ __		____ Age
__ __		____ Age
__ __		____ Age
__ __		____ Age

Mother's Prenatal History

Now we would like to get some information about your mother's history when she was pregnant with you. It is possible that some prenatal events may affect the health of the baby later on.

1. How old was your mother when you were born?

   _____ Age

2. How many live birth pregnancies did your mother have before you were born?

   _____ # live births

3. How many stillbirth pregnancies did your mother have before you were born?

   _____ # stillbirths

4. Before you were born, how many of your mother's pregnancies were twins or multiple births?

   _____ # multiple birth pregnancies

5. Were you a twin or part of a multiple birth (triplets, quadruplets, etc.)?

   (If NO, go to question 8.)

   0. No
   1. Yes

6. Were you and your twin (or multiple birth siblings) identical?

   0. No
   1. Yes

7. Was your twin (or any of these multiple birth siblings) female?

   0. No
   1. Yes

8. Did you weigh less than 5½ pounds, between 5 ½ and 9 pounds or more than 9 pounds when you were born?

   1. Less than 5 ½ pounds
   2. 5 ½ - 9 pounds
   3. More than 9 pounds
   9. Don't Know

9. Did your mother smoke cigarettes when she was pregnant with you?

   0. No
   1. Yes
   9. Don't Know

10. Did your mother take a medicine to prevent miscarriage, such as diesthylstilbesterol (DES), when she was pregnant with you?

    0. No
    1. Yes, DES
    2. Yes, other medicine
    9. Don't Know

Study ID _ _ _ _ _ _ _ _

General Personal Background

1. In what state/province and country were you born?

State/Province

_____ [_ _]

Country

_____ [_ _]

2. Up to the age of 30, how many years did you live in each of the types of residential areas, and if the area was in the United States, list the state:

Type of Area	# Years	State
A large city in a metropolitan area (e.g., Detroit, Chicago)	____	_____ [_ _]
A suburban area that is part of a metropolitan area (e.g., Southfield, Troy, Livonia)	____	_____ [_ _]
A small to medium town distant from a metropolitan area (e.g., Lansing, Port Huron, Battle Creek)	____	_____ [_ _]
A rural area or on a farm	____	_____ [_ _]

The following questions are about your heritage, social setting and culture. This is useful since some diseases are more common in some ethnic or cultural groups than others.

3. In which of the following categories would you classify yourself?

1. White/Caucasian
2. Black/African American
3. Hispanic/Latino
4. Asian/Pacific Islander
5. Middle Eastern
6. Native American/American Indian
7. Alaskan Native/Aleut/Eskimo
8. Other (Specify)

_____

4. Is there an ethnic group or ancestry with which your family household identifies (e.g., Korean, Chaldean, Puerto Rican, German, etc.)?

_____ [_ _]

5. What country are most of your father's ancestors from?

_____ [_ _]

6. What country are most of your mother's ancestors from?

_____ [_ _]

7. What religion were you raised in as a child?

1. None
2. Baptist
3. Congregationalist
4. Christian, Not Specified
5. Eastern Orthodox
6. Episcopal
7. Jehovah's Witness
8. Jewish
9. Lutheran
10. Methodist/AME/CME
11. Mormon/Latter Day Saints
12. Muslim
13. Presbyterian
14. Protestant, Not Specified
15. Quaker
16. Roman Catholic
17. Seventh Day Adventists
18. Unitarian
19. Other (Specify)

_____

8. What religion have you practice most of your adult life?

1. None
2. Baptist
3. Congregationalist
4. Christian, Not Specified
5. Eastern Orthodox
6. Episcopal
7. Jehovah's Witness
8. Jewish
9. Lutheran
10. Methodist/AME/CME
11. Mormon/Latter Day Saints
12. Muslim
13. Presbyterian
14. Protestant, Not Specified
15. Quaker
16. Roman Catholic
17. Seventh Day Adventists
18. Unitarian
19. Other (Specify)

_____

9. Starting with the first grade, how much school have you completed?

1. Less than 8 years
2. 8 - 11 years
3. 12 years/completed high school
4. 1-3 years of college/junior college
5. 4 years or graduated from college
6. More than college (post-graduate)

10. What is your marital status?

1. Married or Living as married
2. Widowed
3. Divorced
4. Separated
5. Never Married

Study ID _ _ _ _ _ _ _ _

Household Information

1. Including income provided by you, your spouse/partner, and any other persons living in your household, what was your total household income before taxes last year?

   1. Less than $10,000
   2. $10,000 - $19,999
   3. $20,000 - $34,999
   4. $35,000 - $49,999
   5. $50,000 or more

2. How many people, including yourself, were supported by your total household income last year?

   1. 1
   2. 2
   3. 3
   4. 4
   5. 5
   6. 6
   7. More than 6

3. Do you rent or own your home?

   1. Rent apartment/house
   2. Own house/condominium

4. How much is your monthly payment?

   $_____ per month

Contact Information

It would be a great help to us if you could provide us with the names and addresses of two people who you **do not** live with that could give us your new address if you should move. We would only contact these people if we were unable to reach you at your home address.

1. Name of Contact_____

   Street Address_____

   City_____ State _____ Zip Code _____

   Area Code and Phone Number (_ _ _) _ _ _ -- _ _ _ _

   Relationship to you_____ [_ _]

2. Name of Contact_____

   Street Address_____

   City_____ State _____ Zip Code_____

   Area Code and Phone Number (_ _ _) _ _ _ -- _ _ _ _

   Relationship to you_____ [_ _]